

# ILLUSTRATED CATALOGUE

... OF ...

RAILWAY, STEAMSHIP,

MACHINISTS' AND CONTRACTORS'

TOOLS AND SUPPLIES.

• • • •

THORNTON N. MOTLEY & Co.

NO. 43 JOHN STREET,

NEW YORK,

JANUARY, 1890.

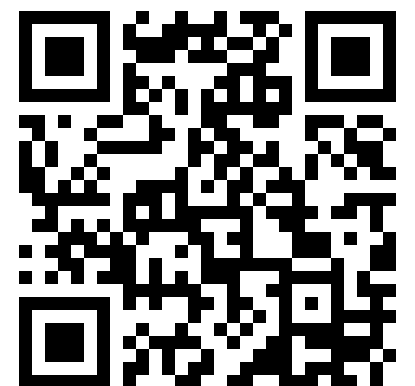
U. S. A.

---

This is a reproduction of a library book that was digitized by Google as part of an ongoing effort to preserve the information in books and make it universally accessible.

Google<sup>TM</sup> books

<https://books.google.com>





A  
15  
M68  
P90a





# ILLUSTRATED CATALOGUE

... OF ...

RAILWAY, STEAMSHIP,

MACHINISTS' AND CONTRACTORS'

TOOLS AND SUPPLIES.

• • • •

THORNTON N. MOTLEY & Co.

NO. 43 JOHN STREET,

NEW YORK,

JANUARY, 1890.

U. S. A.

CHARLES F. BLOOM,  
PRINTER,  
137-141 WILLIAM STREET,  
NEW YORK.

## **AGENTS FOR**

**ROAD SCRAPERS, WHEELBARROWS, CARTS, PLOWS, ETC.,  
CONSTRUCTION LOCOMOTIVES,  
CONSTRUCTION CARS,  
SHOVELS, SPADES, ETC.,  
HOISTING ENGINES, ETC.,  
DERRICKS, HOISTS, ETC.,  
WIRE ROPE,  
CHAINS, CABLES, ETC.,  
HUNTINGTON TRACK GAUGES,  
BELAND TRACK DRILLS,  
FORGES,  
HEADLIGHTS, LANTERNS, LAMPS, ETC.,  
STILLSON WRENCHES,  
BROCK'S CHAIN TONGS,  
THE PAIGE TUBE CO.'S WROUGHT IRON AND GALV. PIPE,  
BOILER TUBES, ETC.,  
LATHES,  
GRINDING AND POLISHING MACHINERY,  
TIRES, AXLES, ETC.  
ELASTIC PACKING CO.,  
UNITED RUBBER CO.,  
E. B. PRESTON & CO.'S LEATHER AND RUBBER BELTING,  
FIRE DEPARTMENT SUPPLIES, ETC.,  
SCOTCH GAUGE GLASSES,  
EUREKA LUBRICATING COMPOUND,  
TIER'S COFFEE HULLER.  
WASS GREASE, AIR AND MUD EXTRACTORS,**



---

---

IN presenting this Catalogue to our customers and friends, we beg to say, that, although we have endeavored to make it as complete as possible, so far as the illustrating of articles such as we manufacture and deal in is concerned, there are many Tools and Materials that we are in position to give estimates and figures on which may not be found listed therein.

We are prepared to furnish specifications and estimates for all classes of Shop Machinery as well as Railroad Rolling Stock and Construction Plants.

We keep in stock a full line of Railway and Machinists' Tools and Supplies, and will execute orders in all cases with prompt attention.

It is impossible for us to issue any Discount Sheet to go with our Catalogue, owing to frequent market changes, but we stand ready at all times to meet market prices.

We would respectfully request, as far as possible, that the figure numbers in our Catalogue designating Illustrated Articles, be referred to in ordering or making inquiries.

We have a separate department for handling foreign business, which insures proper packing and invoicing of goods, and have fitted up a salesroom, showing samples of many goods for the convenience and use of our customers, and to which special attention has been paid in reference to the wants of the Export Trade.

THORNTON N. MOTLEY & CO.,

T. N. MOTLEY,  
J. C. GILBERT,  
J. M. MOTLEY.

NO. 43. JOHN STREET,

NEW YORK, U. S. A.

---

---





# INDEX.

## A

Academy Bells.....	9
Acid Syphons.....	22
Adams Patent Y Valves.....	59
Adze Handles.....	205
Adzes, Carpenters' and Railroad.....	199
Agricultural Engines and Boilers.....	291
Air Cocks.....	70
" Bibb.....	70
Extractors.....	56
Pumps.....	24
" Steam.....	32
Valves.....	70
Alarm Gauges, and Low Water.....	12
" Reliance, and Water Columns.....	11
Alarms, High and Low Water.....	11
Alcoves, Ice Water, Car Saloon.....	345
Alligator Pipe Wrenches.....	113
Ammonia Cocks.....	69
Fittings.....	64
Gauges.....	3
Valves.....	64, 65
Amalgam Bells, Steel.....	9
Anchors.....	358
Angle Couplings.....	307
Valves.....	57 to 61
" Asbestos Disc.....	61
" Frink's Patent.....	58
" Jenkins' ".....	58
" Mica Disc.....	59
" Radiator.....	59
" Safety.....	60
Angular Bit Stocks.....	167
Boring Machine, (Wood).....	167
Antimony.....	338
Anvils.....	193
and Drills, Combined.....	164
and Vises, ".....	193
Horse Shoers'.....	193
Jewelers'.....	193
Nail Pointing.....	193
Apparatus, Gauge Testing.....	5
Arbors for Drill Chucks.....	140
Saw.....	155, 208
Artesian Well Tubing.....	47
Asbestos Cement Felting.....	107
Covering.....	107
Discs, for Valves.....	61
Disc Valves.....	61
Felt.....	107
Packed Cocks.....	69
Packing.....	106
Ash Buckets.....	279
Cans.....	354
Ashton Pop Safety Valves.....	62, 63
Attachments, Switch.....	264
Auger Bits.....	163, 169
Handles.....	207
Augers, Boring Machine.....	167
Carpenters'.....	168
Gas Fitters'.....	115
Millwright and Nut.....	168
Post Hole.....	205
Railroad, Ring, and Ship.....	168
Sand and Clay.....	23
Awl Hafts.....	207
Awls and Tools, Aiken's.....	207
Belt.....	105
Brad, Peg, and Saddlers'.....	207
Scratch and Sewing.....	207

## A

Awning Lines.....	276
Axe Handles.....	205
Axes, Bench and Boys'.....	199
Broad and Chopping.....	199
Double Bitted.....	200
Spanish Pattern.....	200
Axle Grease.....	108
Axles, Car and Locomotive.....	338

## B

Babbitt Metal.....	338
Back Pressure Valves.....	60, 61
Saws.....	210
Backs, Forge.....	190
Bacon Trucks.....	259
Baggage Barrows.....	257
Checks.....	351
Scales.....	322
Trucks.....	259
Wagons.....	257
Bag Trucks.....	258
Balanced Pulleys.....	302 to 304
Balance Scales, Even.....	320
Valves.....	60
Balances, Ice.....	320
Letter and Package.....	320
Locomotive.....	320
Spring.....	320
Warehouse.....	320
Band Iron.....	337
Saw Blades.....	157
Saws.....	157
Bands (Pipe Fittings).....	41
Barbed Fence Wire.....	336
Bark Barrows.....	254
Barrel Rivets.....	324
Trucks.....	258
Barrows, Baggage.....	257
Wheel.....	254 to 257
Bars, Claw, Crow, and Lining.....	241
Puddling and Tamping.....	241
Basin Chain Stays.....	44
Cocks.....	44
Fittings.....	44
Basins, Wash, Car Saloon.....	345
Baskets, Cotton Waste.....	89
Bath Brick.....	108
Cocks and Fittings.....	44
Plugs and Strainers.....	44
Tubs, Copper and Zinc.....	44
Valves.....	44
Beaders, Hand.....	213
Beading Planes.....	215, 217
Beads, Moulders'.....	233
Beams, Scale.....	323
Belgian Stone Rammers.....	241
Paving Hammers.....	241
Bell Cord.....	276
" Bushings.....	342
" Couplings.....	343
" End Hooks and Rings, and Guides.....	342
" Pulleys.....	342
" Screw Eyes and Screw Pulleys.....	342
" Strap Guides.....	343
Cranks.....	8
Hangers' Gimlets.....	170
Pulls and Springs.....	8

Bellows, Blacksmiths'.....	190
Foundry and Moulders.....	234
Bells, Academy and Church.....	9
Car, Gong, and Jingle.....	8
Factory and Fire.....	9
Locomotive.....	8, 9
Steel Amalgam.....	9
Belt Awls and Borers.....	105
Clamps and Couplings.....	104
Fittings.....	104
Hooks.....	104
Lacing.....	103
Punches.....	105
Rivets and Burs, Copper.....	105
" " " Tinned.....	324
Studs.....	104
Stuffing Leather.....	103
Tighteners.....	104
Tools.....	104, 105
Belting, Cotton and Leather.....	103
Link Leather.....	103
Rubber.....	103
Belts, Polishing.....	319
Sheaths and.....	355
Bench Axes.....	199
Hooks.....	212
Lifters, Moulders'.....	233
Screws.....	176
Shears.....	310
Benders, Rail.....	243, 244
Tire.....	191
Bending Cones.....	193
Pins, Plumbers'.....	114
Tools.....	194
Bends, Pipe Fittings.....	41, 46, 48, 49, 50
Benzine.....	108
Bevel Protractors.....	231
Bevels.....	231
T.....	221
Bibb Air Cocks.....	70
Bibbs, Compression.....	43
Hose.....	43
Steam.....	70
Bicycle Oilers.....	86
Bilge Pumps.....	27
Binder Frames for Belting.....	308
Bismuth.....	338
Bit Braces.....	167
Stocks, Angular.....	167
Bits, Auger and in Boxes.....	168, 169
Car.....	168
Center and Pod.....	170
Electric Light and Telephone.....	170
Expansive.....	169
Gimlet and Screw Driver.....	170
Machine.....	169
Black Lead.....	234
Blacksmiths' Anvils.....	193
Bellows.....	190
Chisels.....	194
Forges.....	182 to 186
Hammers and Sledges.....	195
Stocks and Dies.....	195
Tongs.....	194
Tools.....	194
Blades, Saw, Band and Scroll.....	157
" Butchers'.....	211
" Hack.....	212
" Wood.....	211

## B

Blanks, Nut and Screw, Thumb.....	333
Pick.....	201
Blast Forges.....	183, 184, 187
Blind Bolts, Lifts, and Springs, Car.....	341
Trimings, Car.....	341
Block Hooks.....	357
Planes.....	214, 215
Tin.....	338
Blocks, Dock.....	267
Gin and Pulley.....	268
Pulley (Hoists).....	270, 271
Snatch and Tackle.....	266, 267, 268
Blowers.....	188, 189, 190
Hand.....	189, 190
Blow Pipes.....	114
Board Sticks.....	223
Boat Spikes.....	335
Bobs, Plumb.....	231, 232
Boiler Compound.....	107
Feeders.....	55
Feed Pumps.....	29, 34
Patch Bolts.....	324
Rivets.....	324
Testing Pumps.....	5
Tubes and Tube Ferrules.....	47
Tube Cleaners.....	239, 240
" Safe Ends.....	47
Boiler Makers' Clamps.....	137
Hammers.....	310
Reamers.....	310
Tools.....	310
Boilers and Pumps Combined.....	32, 33
Agricultural Engines and.....	291
Locomotive (Stationary).....	295
Marine.....	295
Portable.....	291
Tubular.....	294, 295
Upright.....	290
Bolt Clippers.....	192
Cutters.....	120, 121, 122
Cutting Machines.....	120, 121, 122
Dies.....	126
Dogs.....	137
Ends.....	326
Threading Machines.....	120
Bolting Cloth.....	337
Bolts, Blind, Car.....	341
Boiler Patch.....	324
Carriage.....	327
Copper, Plumbers'.....	114
Elevator Bucket.....	328
Eye.....	358
Hanger.....	326
Machine and Plow.....	325
Screw Ring.....	358
Stove.....	328
Stud.....	326
Tap.....	326
Tire.....	327
Track.....	326
Window Car.....	341
Books, Discount, Ladd's.....	359
Log, Engineers'.....	355
Borax.....	103
Borers, Belt.....	105
Tap.....	114, 171
Boring Machine Augers.....	167
Machines.....	158, 167
Bossing Sticks.....	114
Bottom Swages.....	194
Bottoms, Coffee and Hide.....	323
Weighing.....	323
Box Coils.....	52
Freight Cars.....	262
Lifters, Moulders'.....	233
Oil Cans.....	85
Scrapers.....	213
Trucks.....	257

## B

Boxes, Journal for Shafting.....	306
Mitre.....	212
Plumbers' Flour, Grease, and Rosin.....	114
Vise.....	181
Boxwood Rules.....	222
Scales, Triangular.....	230
Boys' Axes.....	199
Braces, Ball.....	167
Bit.....	167
" Ratchet.....	167
Brad Awl Handles and Hafts.....	207
Awls.....	207
Brads.....	334
Wire.....	335
Brake Hose.....	100
Branches (Fittings).....	41, 46, 45, 49
Brands, Burning.....	234
Brass, Roll and Sheet.....	338
Tubes.....	47
Wire.....	336
Brazing Lamps.....	90
Breakers, Ore and Rock.....	298, 299
Breaking Plows.....	252
Breast Drills.....	164
Brewers' Hose.....	100
Brick Barrows.....	255, 257
Bath.....	102
Trowels.....	232
Bridge Builders' Wrenches.....	173
Rivets.....	324
Bristle Brooms.....	236
Broad Axes.....	199
Bronze, Phosphor.....	338
Tubes.....	47
Brooms, Bristle, Corn, Rattan and Steel.....	236
Handles for.....	235
Hotel and Railroad.....	236
Push.....	235
Track.....	236
Brushes and Cards, File.....	175
Casting and Foundry.....	235
Dusting.....	237
Flue and Tube.....	239
Horse and Shoe.....	238
Kalsomine and White Wash.....	238
Marking.....	237
Paint and Varnish.....	238
Pope's Eye and Pope's Head.....	236
Roof and Tar.....	237, 238
Scrubbing and Stove.....	237
Wall and Window.....	236
Buckets, Ash and Coal.....	279
Deck.....	353
Elevator and Ore.....	278, 279
Fire.....	353
Rubber.....	353
Water.....	279
Wooden.....	353
Buffers.....	195
Buffing Heads.....	319
Lathe Spindles.....	319
Lathes and Columns.....	319
Bulls Eye Lanterns.....	94
Bunting.....	355
Burners, Lamp and Lantern.....	98
Burning Brands.....	234
Burs, Rivets and.....	104, 324
Bush Hammers.....	195
Hooks.....	200
Bushings, Bell Cord.....	342
Pipe Fittings.....	48, 49
Butchers' Saws.....	211
Butterfly Valves.....	60
Buttresses.....	195
Butts, Brass and Car Door.....	347
Wrought Iron.....	348

## C

Cabinets, Oil.....	84, 85
Cab Lamps, Locomotive.....	91
Sash and Window Fasteners, Locomotive.....	340
Cable Chain.....	358
Caboose Lamps.....	92
Cages, Platform.....	279
Calking Chisels, Plumbers'.....	114
Irons and Mallets.....	356
Tools.....	356
Calliper Rules.....	222, 227
Callipers.....	226, 227
and Gauges.....	227
Machinists.....	227
Canal Barrows.....	254, 255
Cane Cars.....	263
Cans, Ash.....	354
Kerosene, Oil, and Oil Waste.....	84, 85
Squirt (Oilers).....	86 to 89
Tallow.....	89
Cant Hooks.....	205
Cap Screws.....	332
Cape Chisels Plumbers'.....	114
Caps, Hose.....	101
Pipe Fittings.....	48, 49, 50
Car Axles.....	338
Bells, Horse.....	8
Bits.....	168
Blind Trimmings.....	341
Box Jacks.....	249
Builders' Materials.....	262
Chandeliers.....	97
Deck Sash Fittings.....	342
Door Fittings.....	345 to 347
Grease, Axle.....	107
Lamps.....	95, 96, 97
Movers and Pushers.....	245
Racks, Basket.....	343
Replacers.....	244, 245
Saloon Fittings.....	345
Seat.....	343
Springs.....	340
Tires and Wheels.....	338, 339
Cars, Cane and Plantation.....	263
Coal, Coke and Mining.....	260
Contractors'.....	261
Dumping.....	260, 261
Freight and Passenger.....	262
Hand and Push.....	262
Wrecking.....	262
Cards, File.....	175
Carpenters' Adzes.....	199
Drawing Knives.....	213
Door Clamps.....	176
Carpet Tacks.....	334
Trucks.....	258
Carriage Bolts.....	327
Jacks.....	251
Carriers, Trunk.....	259
Cartridges, Lubricating.....	107
Cart Scales.....	322
Carts, Contractors' Dump.....	259
Hand Push.....	259
Cases for Head Lights.....	93
Casting Brushes.....	235
Catches, Sash, Car Deck.....	342
Caulking Chisels, Plumbers'.....	114
Tools.....	356
Caustic Soda.....	355
Ceiling Plates, Steam Fittings.....	52
Cement Felting, Asbestos.....	107
Center Bits.....	170
Grinders.....	318
Squares.....	230
Centering Chucks and Machines.....	149
Centers, Shaper.....	149
Centrifugal Pumps.....	58
Chain, Cable, Crane, and Dredge.....	358
Coil.....	277

C		C		C	
Chain, Dredge, Quarry, and Rafting.....	358	Clinch Nails.....	335	Contractors' Dump Carts.....	259
Giant.....	278	Clippers, Bolt and Rivet.....	192	Dump Cars.....	261
Hooks.....	358	Clocks, Locomotive and Marine.....	4	Picks.....	201
Jack.....	277	Watchman's.....	7	Plows.....	252
Link.....	277	Closet Cases, Water.....	45	Cooler Cocks, Telegraph.....	345
Links.....	277	Closets Water.....	45	Coolers, Water.....	353
Pipe Wrenches.....	113	Cloth, Bolting.....	337	Copper Bolts, Roofers'.....	114
Punches.....	358	Emery and Sand.....	108	Hammers.....	197
Safety.....	277	Wire.....	337	Ingot.....	338
Shackles.....	358	Clothes Lines.....	276	Rivets and Burs.....	104
Stays for Basins.....	44	"    Wire.....	330	Sheet.....	338
Vises.....	181	Cloths, Sponge and Sweat.....	355	Tipped Hammers.....	197
Chair Nails.....	334	Clout Nails.....	334	Tubes.....	47
Chalk Lines.....	276	Coach Makers' Vises.....	178, 179	Wire.....	336
Line Reels.....	207	Screws.....	325	Coppers, Soldering.....	114
Chamois Skins.....	375	Coal Barrows.....	256, 256½, 257	Copying Presses.....	353
Chandeliers, Car.....	97	Buckets.....	279	Coril, Bell.....	276
Charcoal Furnaces.....	115	Cars.....	260	Braided.....	276
Charging Barrows.....	258	Forks.....	202	Fittings, Bell.....	342, 343
Chasers for Threading Pipe.....	115	Hods.....	354	Picture, Wire.....	336
Check Springs.....	8	Picks.....	201	Sash.....	275, 276
Valves.....	57, 58, 59	Screens.....	241	Corlage.....	276
" Frink's Patent.....	58	Shovels and Scoops.....	204	Cores, Flour for.....	234
" Jenkins' ".....	58	Sledges.....	195	Cork Fenders.....	355
" Mica Disc.....	59	Coaling Tubs.....	279	Corn Barrows.....	254
Checks, Baggage.....	351	Coat and Hat Hooks, Car.....	344	Brooms.....	236
China Whistles, Steam.....	10	Cobble Stone Paving Hammers.....	241	Corner Chisels.....	213
Chimneys, Lamp.....	98	Rammers.....	241	Trowels.....	232
China Nails.....	334	Cock Wrenches.....	69	Corrective Gauges.....	228
Chipping Hammers.....	196	Cocks, Air.....	70	Corrugated Sheet Iron.....	337
Knives, Plumbers.....	114	Ammonia.....	69	Corundum.....	108, 319
Vises.....	180	Asbestos Packed.....	69	Wheels.....	313
Chisel Handles.....	206	Basin and Bracket Basin.....	44	Cotters, Spring.....	331
Chisels, Blacksmiths'.....	194	Compression Lock.....	43	Cotton Belting.....	103
Box.....	197	Cooler, Telegraph.....	345	Duck.....	255
Cold.....	114, 194, 197	Counter.....	44	Hose.....	100
Corner.....	213	Cylinder.....	70	Mops.....	355
Firmer and Framing.....	213	for Steam Gauges.....	69	Sail Twine.....	355
in Boxes.....	213	Gauge, Compression and Lever Handle 71, 72	72	Trucks.....	258
Plumbers'.....	114	Lock.....	43	Waste Baskets.....	89
Track.....	242	Meter and Service.....	69	Counter Cocks.....	44
Choppers, Ice.....	354	Racking.....	43	Scales.....	321
Chopping Axes.....	199	Steam.....	69	Counterbores.....	130
Chucks, Centering.....	149	Coe's Wrenches.....	173	Countershafts.....	308
Drill.....	140, 141	Coffee Bottoms.....	323	Countersinks.....	131
for Pipe Threading Machines.....	118	Hullers and Separators.....	301	Counters, Revolution.....	4
Lathe.....	141 to 148	Shovels.....	204	Couplings, Angle for Shafting.....	307
Nipple.....	117	Coil Chain.....	277	Bell Cord.....	343
Planer.....	148, 149	Stands.....	52	Belt.....	104
Vise.....	149	Coils, Box.....	52	Brass.....	48, 49
Church Bells.....	9	Heater.....	52	Hose.....	101
Churn Drills.....	241	Steam Heating.....	52	Iron Pipe Fittings.....	48, 49, 50
Cigar Box Nails.....	334	Coke Cars.....	260	Shaft.....	306, 307
Circular Hand Shears.....	310	Forks.....	202	Siamese for Hydrants.....	68
Plaques.....	215	Cold Chisels.....	114, 194, 197	Cove Planes.....	218
Saw Mauls.....	208	Collar Screws.....	332	Covering, Asbestos Removable.....	107
" Mills.....	206	Swages.....	194	Hair Felt.....	107
Saws.....	155, 202, 293	Collars, Shafting, Wrought Iron.....	309	Crabs, Hoisting.....	280
Cistern Pumps.....	23	Columns, Combination Steam and Water.....	11	Cradles, Weighing.....	323
Clamp Dogs.....	137	Gauge.....	11	Crane Chain.....	358
Heads.....	176	Steam.....	11	Cranes.....	272
Hub Pulleys.....	304	Water.....	11, 36	Cranks, Bell and End Bell.....	8
Clamps, Adjustable Screw.....	175	Combination Gauges.....	3	Creners.....	194
Belt.....	104	Compass Saws.....	211	Crocus.....	319
Boiler Makers' and Machinists'.....	137	Compasses.....	225	Cross Cut Saws.....	209
Cabinet and Carriage Makers'.....	175	Compound, Boiler and Lubricating.....	107	"    One Man.....	209
Door.....	176	Gauges.....	3	Head Branches (Pipe Fittings).....	41
Hose.....	101	Compression Bibbs.....	43	Valves.....	57 to 61
Screw.....	175	Cocks, Basin.....	44	" Asbestos Disc.....	61
Vise.....	137, 178	" Lock.....	43	" Frink's Patent.....	58
Claw Bars.....	241	Gauge Cocks.....	72	" Jenkins' ".....	58
Hatchets.....	198	Condenser Heads.....	53	" Mica Disc.....	59
Jacks.....	249	Air Pump and.....	32	Crosses, Brass.....	48, 49
Claws, Tack.....	197	Conducting Hose.....	100	Cast Iron for Wrought Iron Pipe.....	48, 49
Clay Augers.....	23	Conductors' Lanterns.....	94	for Spiral Riveted Pipe.....	39
Fire.....	234	Punches.....	351, 352	Malleable Iron for Railing.....	51
Cleaners, Tube.....	239, 240	Cones, Bending.....	193	"    "    Wrought Iron Pipe.....	50
Cleats.....	358	Connecting Shackles.....	277	Crossings, Railroad.....	265

## C

Crow Bars.....	241
Crows, Jim.....	243
Pipe Drilling.....	115
Crucibles, Graphite.....	234
Crushers, Ore and Stone.....	298, 299
Cups, Grease.....	82, 83, 89
Lubricating Compound.....	82, 83
Oil.....	73, 74, 78, 81
" Dreyfus'.....	79
" Indexed and Sight Feed.....	78
" Lonergan.....	80, 81
Curtain Hooks, Car.....	344
Cut Nails.....	335
Off Saws, Mitre and Splitting.....	156
Tacks.....	334
Cutters, Bolt.....	120, 121, 122
Lace.....	105
Milling.....	139
Pipe.....	109, 111
Washer.....	105
Cutting Machines, Bolt.....	120, 121, 122
" Pipe.....	119
Nippers.....	224, 225
Off Machines, Pipe.....	120
" Tools.....	139
Pliers.....	224
Punches.....	356
Cylinder Cocks.....	70
Lubricators.....	76, 77
Oil Pump, Hand.....	75
Relief Valves.....	63
Cylinders, Pump.....	23, 24

## D

Dado Planes.....	215, 217
Damper Regulators.....	12, 13
Daters, Ticket.....	352
Davy's Miners' Safety Lamps.....	90
Deck Buckets, Oak.....	353
Sash Fittings, Car.....	342
Swabs.....	355
Depot Scales.....	322
Derrick Fittings.....	273
Winches.....	280
Detectors, Time, Watchman's.....	7
Diagonal Wrenches.....	172
Diagraphs.....	231
Diamond Turning Tools.....	313
Wrenches.....	172
Die Dogs.....	136
Holders.....	109
Stocks.....	109, 110
Dies and Holders, Lightning.....	123
and Taps, Blacksmiths'.....	125
Blacksmiths' and Machinists' Stocks and.....	125
Bolt or Machine, Solid.....	126
Pipe, Solid.....	109
" Cutting, for Pipe Machines.....	117
Setting, for Grommets.....	356
Diggers, Post Hole.....	205
Dirt Burrows.....	251 to 257
Discount Books, Ladds'.....	359
Disca, Asbestos for Valves.....	61
for Valves.....	58, 59, 61
Mica for Valves.....	59
Dividers.....	225
Spring.....	225
Dock Blocks.....	267
Dog Wrenches.....	138
Dogs, Bolt and Clamp.....	137
Die.....	136
Lath.....	136, 137
Door Butts, Car.....	347
Clamps.....	176
Holders, Car.....	347
Latches and Locks, Car.....	346, 347

## D

Door Planes.....	217
Dowel Pointers.....	171
Drain Pipe, Cast Iron.....	40
" Fittings, Cast Iron.....	41, 42
" Portland Cement & Vitrified.....	46
" Portland Cement.....	46
" Vitrified.....	46
Draughtsmen's T Squares.....	231
Drawing Knives.....	213
Dredge Chain.....	358
Dressers, Emery Wheel.....	313
Plumbers'.....	114
Dressing Machines, Grindstone.....	314
Drill Chucks.....	140, 141
Gauges, Twist.....	229
Grinding Machines, Twist.....	317, 318
Holders.....	138
Pipe Reamer and Tap Combined.....	110
Posts for Ratchet Drills.....	165
Drills and Anvils Combined.....	164
and Vises.....	164
Angular.....	163
Breast.....	164
Churn.....	241
Hand.....	164
Horizontal, Blacksmiths' and Machinists'.....	162
Pipe.....	115
Portable.....	163
Power and Hand.....	160 to 163
Ratchet.....	165, 166
Rock, Steam.....	297
Stone.....	241
Straightway.....	130
Track.....	243
Twist.....	128 to 130
" Sockets for.....	128
Upright, Blacksmiths' & Machinists'.....	160 to 162
Drip Pans, Urinal.....	45
Drive Punches.....	105
Well Points.....	23
" Pumps.....	23
Drivers, Screw.....	170, 171
Druggists' Scales.....	321
Dry Goods Trucks.....	259
Duck, Cotton.....	355
Dumping Cars and Carts.....	259, 261
Dusting Brushes.....	237

## E

Eclipse Injectors.....	20, 21
Edges, Straight.....	230, 231
Ejectors, Friedman's, Model, and Schutte's.....	22
Elbows, Brass.....	48, 49
Cast Iron for Cast Iron Pipe.....	41
" " Wrought Iron Pipe.....	48, 49
for Cement Drain Pipe.....	46
for Spiral Pipe.....	39
for Vitrified Drain Pipe.....	46
Malleable Iron for Railing.....	51
" " Wrought Iron Pipe.....	50
Ornamental for Steam Fitting.....	52
Electric Leather Belting.....	103
Light Bits.....	170
Elevator Bucket Bolts.....	328
Buckets.....	278
Valves.....	64
Elevators, Water or Ejectors.....	22
Emery, Emery Cloth and Emery Paper.....	108
Wheel Dressers.....	313
" Grinding Machines.....	315, 317
Wheels.....	313
Enameling Pipe and Fittings.....	40
End Hooks, Bell Cord.....	342
Ends, Bolt.....	326
Safe, for Boiler Tubes.....	47
" Putting on.....	47

## E

Engine Hose.....	100
Indicators.....	7
Lathes.....	151
Oilers.....	87
Valves, Portable.....	63
Engineers' Drip Oilers.....	87
Hammers.....	195, 196
Hand Lamps and Lamps.....	90
Log Books.....	355
Oil Fillers.....	89
Oil Sets.....	88
Wrenches.....	172
Engines, Agricultural.....	291
Gas.....	292, 293
Hoisting.....	282 to 287
Hot Air Pumping.....	293
Oil.....	292
Portable.....	291
Pumping, Gas.....	293
Stationary.....	288, 289
Upright, and Boilers.....	290
Exhausting Fans.....	188
Expanders, Tube.....	310
Expansion Joints.....	50
Plates, Steam Fittings.....	52
Expansive Bits.....	169
Hollow Augers.....	171
Express Scales.....	320
Extension Bit Holders.....	167
Pieces, Pipe Fittings.....	50
Extractors, Air, Grease and Mud.....	56
Eye Bolts.....	353
Eye, Pope's, Brushes.....	235

## F

Facings, Foundry.....	234
Soapstone.....	234
Factory Bells.....	9
Fans, Exhausting.....	188
Farri Barrows.....	255
Bells.....	9
Farriers' Hammers.....	195
Knives.....	195
Feeders, Boiler.....	55
Feed Water Heaters.....	53
Pumps, Boiler.....	29
Felt, Hair.....	107
Felling, Asbestos Cement.....	107
Fence Posts, Steel.....	336
Staples.....	336
Wire, Barbed.....	336
" Ribbon, Twisted.....	336
" Stretchers.....	336
Fenders, Cork.....	355
Ferrules for Boiler Tubes.....	47
Fids, Hand and Standing.....	355
Field Hoes.....	202
Fifth Wheel Plates.....	193
Figures, Steel.....	234
File Brushes and Cards.....	175
Holders.....	175
Handles.....	206
Files and Raps.....	174
Fillers, Oil, Zinc and Copper for Engineers.....	89
Filletster Planes.....	215, 217
Finishing Nails.....	334
Fire and Steam Regulators.....	12
Bells.....	9
Department Play Pipes.....	100
Mortar.....	234
Pails.....	353
Pumps, Steam.....	31
Sand.....	234
Shovels.....	354
Firmer Chisels.....	213
Gouges.....	213

## F

Fish Joint Bolt Wrenches	173
Fish Lines	276
Fittings, Basin	44
Bath	41
Belt	104
Brass for Pipe	48, 49
" " Gas Fixtures	49
Car Saloon	345
" Seat	343
Cast Iron for Wrought Iron Pipe	48, 49
Derrick	273
for Anhydrous and Aqua Ammonia	64
for Cast Iron Pipe	41, 42
for Cement Drain Pipe	46
for Spiral Riveted Pipe	39
for Vitrified Drain Pipe	46
Galvanized for Wrought Iron Pipe	48, 49
Hose	101
Malleable Iron for Railing	51
" " " Wrought Iron Pipe	50
Steam, Cast Iron	48 to 52
" Ornamental	52
Suction, Patent	53
Wire Rope	274, 275
Fixtures for Railroad Tanks	37
Gas, Fittings for	49
Grindstone	314
Flange Lifters, Moulders'	233
Unions	48, 49
Flanges and Beads, Moulders'	234
Cast Iron	48, 49
for Caulking on Pipe	39
Moulders'	233
Flasks, Founders'	234
Flatters	194
Floor Chisels, Plumbers'	114
Plates, Steam Fittings	52
Flour Boxes, Plumbers'	114
for Cores	234
Flue Brushes	239
Cleaners	240
Flutes, Moulders'	233
Foot Power Lathes	153
Rail Brackets	51
" Fittings	51
Valves and Strainers	57
Force Pumps	24 to 28
Fore Planes	216
Forge Backs	190
Forges	182 to 187
Heating	187
Miners'	185
Water Tanks for	185 to 187
Forks, Coal, Coke, Ore and Stone	202
Rail	242
Foundry Barrows	256½
Bellows	234
Brushes	234
Facings	234
Flasks	234
Frames, Binder for Belting	308
for Gauges	5
Saw	211
Wall for Journal Boxes	306
Weighmasters'	324
Framing Chisels	213
Freight Cars	262
Fret Scroll Saws	157
Friction Clutch Pulleys	309
Frogs, Rail-Spring	264
Yoke	264
Fullers, Top and Bottom	104
Funnels, Tin	85
Furnace Scoops	204
Furnaces, Charcoal	115
Furniture Nails	334
Fusible Plugs	11

## G

Gang Saws	209
Garden Barrows	255
Rakes	202
Gas Engines	292, 293
" Pumping	293
Fitters' Augers	115
Lamps, Street	99
Pipe, Wrought Iron	47
Pliers	113
Tapping Machines	115
Valves	65 to 67
Well Tubing	47
Gaskets or Packing Rings	106
Gasolene	108
Torches	90
Gate Hinges, Pipe	51
Valves, Chapman's	66
" Haydonville	65
" Kennedy's	65
" Ludlow	67
Gauge Cocks, Compression & Lever Handle	71, 72
Columns	11
Glasses	72
Frames	5
Syphons, Steam	69
Testing Apparatus	5
Gauges, Alarm	11
Ammonia	3
and Callipers	227
Center	228
Combination (Water Pressure)	3
Compound	3
Corrective	228
Hole	229
Hydraulic	2
Jewelers'	229
Locomotive	1
Low Water and Alarm	12
Marking	219, 227
Music Wire	229
Nut and Washer	229
Pattern	228
Pressure, or Vacuum	1, 2
" German Style	2
" Recording	5
Pyrometer Steam	3
Screw	228
" Pitch and Screw Thread	229
Standard	228
Steam and Vacuum	1, 2
Step	228
Surface	227
Test	1
" Pump and	5
Track	242
Twist Drill	229
Water	72
Wire	228, 229
Gauging Rods	223
Gear Rules	230
Gearing	309
Giant Chain	278
Gimlet Bits	170
Gimlets	170
Bell Hangers'	170
Spike	170
Gimp Tacks	334
Gin Blocks	268
Glass, Ground	108
Tubes for Water Gauges	72
Glasses, Gauge	72
Level	220
Glaziers' Points	334
Globe Valves	57, 58, 59
" Asbestos Discs	61
" Frink's Patent	58
" Hose	59
" Jenkins' Patent	58

## G

Globe Valves, Mica Disc	59
" Safety	60
Globes, Lamp and Lantern	98
Glue Heaters, Steam	53
Pots	53
Gong Bells and Pulls	8
Gongs, Car	8
Common	8
Fire	9
Locomotive	8
Steam	10
Trip	8
Gouges	213
Governor Valve Chambers	14, 16
Valves	14, 15, 64
Governors, Horizontal	15, 16
Steam Engine	14, 15, 16
Graders, Surface	252
Grain Wagons	259
Graphite Car Grease	107
Crucibles	234
Lubricator	107
Graupling Irons	358
Grease	108
Axle	108
Boxes, Plumbers'	114
Car	107
Cups	82, 83, 89
Extractors	56
Graphite	107
Pails	85
Grinders, Center	318
Knife	316
Tool	316, 317
Grinding Machines, Emery Wheel	315 to 317
" Tool	316, 317
" Twist Drill	317, 318
Grindstone Dressing Machines	314
Fixtures	314
Grindstones	314
Grips, Pipe	117
Grocers' Scales	321
Grommet Knobs	356
Grommets	356
Grooving Plows (Planes)	215, 219
Ground Glass	108
Grub Hoes	201
Guides, Bell Cord	342, 343
Strap Bell Cord	343
Gum Shellac	108

## H

Hack Saw Blades	212
Saws	212
Hafts, Awl	207
Hair Felt	107
" Asbestos	107
Half Hatchets	198
Ham Trucks	259
Hame Rivets	324
Hammer Handles	206
Hammers	194 to 197
Blacksmiths' Hand	195
Bush	195
Chipping	196
Copper and Copper Tipped	197
Engineers'	195, 196
Hand Drill	195
Machinists'	196
Masons'	195
Nail	196
Napping	195
Paving	241
Planishing	197
Riveting	196
" Boiler Makers'	310

C  
D  
E  
F  
G  
H

## H

Hammers, Set.....	194
Shoe.....	196
Spanling.....	195
Steam.....	312
Stone.....	195
Striking.....	195
Tack.....	197
Hammock Hooks.....	357, 358
Hand Cylinder Oil Pumps.....	75
Drill Hammers.....	195
Drills.....	164
Fids.....	355
Lamps, Engineers' and Tubular.....	90, 91
Lathes.....	153
Saws.....	210
Screws.....	175
Shears.....	310
" Circular.....	310
Torches.....	90
Vises.....	176
Handled Awls.....	207
Handles, Adze and Axe.....	205
Auger.....	207
Chisel.....	206
File.....	206
Hammer and Hatchet.....	206
Maul.....	206
Mop.....	355
Pick.....	205
Plane and Saw.....	206
Saw, Cross Cut.....	209
Screw Driver.....	206
Sledge.....	206
Hanger Bolts.....	326
Hangers for Shafting.....	305, 306
Pipe, Steam Fittings.....	52
Hardies.....	194
Hat Hooks, Car.....	344
Lamps.....	90
Hatchet Handles.....	206
Hatchets, Claw and Half.....	198
Hunters' and Lathing.....	198
Shingling.....	198
Hatchway Hoists.....	269
Hawsing Irons and Mallets.....	356
Hay Scales.....	322
Head Light Cases.....	93
" Reflectors.....	93
Lights, Locomotive.....	93
Pope's Brushes.....	235
Headers, Rivet.....	104
Heading Tools.....	194
Heads, Clamp.....	176
Condenser.....	53
Lathe.....	154
Polishing.....	319
Heater Coils.....	52
Heaters, Feed Water.....	53
Glue, Steam.....	53
Heating Coils, Steam.....	52
Hide Bottoms.....	323
High and Low Water Alarms.....	11
Hinges, Brass.....	347
Car Door.....	347, 348
for Pipe Gates.....	51
Hook and Eye, and Screw Hook.....	348
Strap and T.....	348
Wrought Iron.....	348
Hob Nails.....	334
Hods, Coal.....	354
Hoes, Field.....	202
Grub.....	201
Mortar, Planters' and Street.....	202
Hoisters, Coal.....	281
Horse Power.....	281
Hoisting Crabs.....	280
Engines.....	282 to 287
Hooks.....	323

## II

Hoisting Machines.....	269 to 272
Wheels.....	274
Hoists, Hatchway.....	269
Rope and Chain.....	266 to 271
Holders, Bit, Extension.....	167
Car Door.....	344
Drill.....	138
File.....	175
Reamer, Chucking.....	138
Signal.....	355
Hole Augers and Diggers, Post.....	205
Gauges.....	229
Hollow Augers.....	171
" Expansive.....	171
Hollows and Rounds (Planes).....	219
Hoof Nippers.....	194
Hook and Eye Hinges.....	348
and Ladder Trucks.....	162
Plates, Steam Fittings.....	52
Hooks, Belt.....	104
Bench.....	212
Block.....	357
Bush.....	200
Cant.....	205
Chain.....	358
Coat and Hat, Car.....	344
Curtain, Car.....	344
End Bell Cord.....	342
for Steam Fittings.....	52
Hammock.....	357, 358
Hoisting.....	323
Match, with Thimbles.....	357
Packing.....	106
Pot.....	115
Pouch, Mail Car.....	344
S, Wrought.....	277
Screw Ring.....	358
Shave.....	114
Sister, with Thimbles.....	357
Swivel, " ".....	357
Tackle, " ".....	357
Weighing.....	323
Hoop Iron.....	337
Hoppers, Railroad Car.....	45
Horse Brushes.....	238
Power.....	281
Shoe Turning Sledges.....	195
Shoers' Anvils.....	193
" Tools.....	195
" Vises.....	181
Shoeing Pincers.....	194
Horizontal Boilers.....	295
Governors.....	15, 16
Hose Bibbs.....	43
" Compression.....	43
Caps.....	101
Clamps and Couplings.....	101
Cotton.....	100
Fittings.....	101
Globe Valves.....	59
Linen.....	100
Nozzles.....	101
Reels.....	102
Rubber.....	100
Sprinklers.....	101
Straps.....	101
Suction.....	100
Hot Air Pumping Engines.....	293
Chisels.....	195
Hotel Brooms.....	236
Hub Pulleys.....	304
Taps.....	127
Tools, Moulders'.....	233
Hubs, Pipe Fittings.....	41
Saddle, Pipe Fittings.....	42
Hullers and Separators, Coffee.....	301
Coffee.....	300
Hungarian Nails.....	334

## H

Hunters' Hatchets.....	198
Hydrant Hose.....	100
Hydrants.....	68
Hydraulic Gauges.....	2
Jacks.....	250
Pressure Pumps, Plumbers'.....	24
Punches.....	311
Rams.....	30
Tubes.....	47
Hydrometers, Salinometer.....	6

## I

Ice Balances.....	320
Choppers and Scrapers.....	354
Inclinometers.....	220
Increases, Speed (Jacks).....	37
Indicators, Speed.....	4
Indurated Fibre Pails.....	353
Injectors.....	17 to 22
Duplex.....	21
Eclipse and Improved Eclipse.....	20, 21
Friedman's.....	18
Hancock Inspirator.....	17
Korting Double Tube.....	20
Messinger's.....	19
Monitor.....	18, 19
Union.....	21
Inspirators, Hancock.....	17
Iron, Band, Hoop and Scroll.....	337
Bar.....	338
Cutters (Shears).....	311
Horse Shoe.....	338
Pig.....	338
Plate and Tank.....	337
Scales.....	321
Sheet.....	337
" Corrugated.....	337
Wire.....	336
Irons, Calking.....	356
Grappling.....	358
Hawsing.....	356
Plane.....	214, 219
Tuyere.....	190
Ivory Rules.....	222

## J

Jack Chain.....	277
Planes.....	215, 216
Screws.....	251
Jacks, Car Box.....	249
Carrying.....	248
Claw.....	249
Carriage and Wagon.....	251
for Increasing Speed.....	37
Hydraulic.....	250
Lever.....	247
Lifting.....	249
Locomotive.....	248
Pulling.....	250
Ratchet.....	247, 248
Screw.....	247, 248
Track.....	245, 246
Telescope.....	250
Timber.....	249
Traversing.....	248
Weighing.....	246
Jail Padlocks.....	349
Jewelers' Anvils.....	193
Gauges.....	229
Vises.....	178
Jim Crows.....	243
Jingle Bells.....	8
Jointer Planes.....	216
Joints, Expansion.....	50
Swing.....	50
Journal Boxes for Shafting.....	306

## K

Kalsomine Brushes	238
Kerosene Cans	85
Key Hole Saws	211
Wrenches	172
Keys, Spring	331
Kilp Swages	194
Kitchen Saws	211
Knife Grinders	316
Knives, Drawing	213
Farriers'	195
Machine	159
Plumbers' Chipping	114
Pruning, with Saw	211
Sheath	355
Knobs, Car Door	346
Grommet	356

## L

Lace Cutters	105
Leather	103
Tacks	334
Lacing, Cut	103
Metallic Tipped	103
Ladder Trucks, Hook and	162
Ladles, Melting	115
Lag Screw Wrenches	173
Screws	325
Lamp Burners	98
Chimneys	98
Globes	98
Shades	98
Trimmers	98
Lamps	90 to 99
Brazing	90
Caboose Signal	92
Car	95, 96, 97
Gauge	91
Hand, Engineers' Malleable Iron and	
Tubular	90, 91
Locomotive Cab	91
Marine	95
Miners' Safety	90
Post	99
Railroad	92, 93
Safety, Miners'	90
Side	91
Signal	92
Station	91
Street	99
Student	91
Surveying	90
Switch Target	92
Table	91
Torch	90
Wall	91
Lantern Burners	98
Chimneys	98
Globes	98
Lanterns, Bull's Eye	94
Conductors'	94
Marine	95
Police	94
Railroad	94, 95
Trade	94
Tubular	94
Latches, Door, Car Saloon	345
Lathe Chucks	141 to 148
Dogs	136, 137
Heads	154
Spindles, Buffing	318
Tools	138, 139
Wrenches	138
Lathes, Amateur	153, 154
Bench	163
Buffing	318, 319
Engine	151

## L

Lathes, Foot Power	153
Hand	153
Screw Cutting	152
Wood Turning	154
Lathing Hatchets	198
Launches, Steam	292
Lawn Sprinklers	101
Lead Pipe	42
Red	108
Sealing Presses	351
Seals	351
Sheet	42, 38
Traps	42
Tubing	42
Waste Pipe	42
White	108
Leader Pipe, Spiral Seam Riveted	38
" Shoes	40
Leather Belting	103
Lace	103
Trucks	259
Walrus	319
Leg Vises	181
Lotter Balances	320
Letters, Pattern	234
Steel	234
Level Glasses	220
Levels, Plumbs and	220
Pocket	220
Track	242
Lever Drills, Upright	164
Jacks	247
Lifters, Moulders'	233
Lifting Jacks	249
Lifts, Blind and Window, Car	341
Lime Shovels	204
Line Reels, Chalk	207
Lines, Awning	276
Chalk and Masons'	276
Clothes	276
" Wire	336
Fish	276
Lining Bars	241
Nails	334
Link Belting, Leather	103
" Chain	278
Chain	277
Linen Hose	100
Links, Chain	277
Open	277
Lip Thimbles	357
Lock Cocks	43
Nuts	329
Washers	329
Locks, Door, Car	346
Pad	349, 350
Jail Pad	349
Car Window Sash	340
Locknuts, Pipe Fittings	48, 49, 50
Locomotive Axles	338
Balances	320
Bells	9
Boilers	295
Cab Sash Fastenings	340
Clocks	4
Gauges	1
Gongs	8
Head Lights and Head Light Reflectors	93
Injectors	17 to 22
Jacks	248
Oilers	87
Ratchet Drills	166
Tires	338
Torches	89
Locomotives	263
Log Books, Engineers'	355
Measures	223
Long Screws, Pipe Fittings	48, 49

## L

Looking Glass Tacks	334
Lubricating Cartridges	107
Compound	107
" Cups	82, 83
Lubricator, Graphite	107
Lubricators	74 to 77
Automatic	75
Cylinder	76, 77

## M

Machine Bits	169
Bolts	325
Knives	159
Oilers	56
Screws	333
Taps	127
Vises, Milling	149
Machines, Bolt Cutting	120 to 122
Boring (Metal)	158
" (Wood)	167
Centering	149
Grinding, Emery Wheel	315 to 317
Tool and Twist Drill	316 to 318
Grindstone Dressing	314
Milling	150
Mortising	158
Pipe	110
" Cutting and Cutting off	119
" Tapping	115, 118
" Threading	119, 120
Planing	150, 159
Sawing and Hand Sawing	155, 156
Shaping	150
Tapping, Pipe	115, 118
Threading, Bolt	120
Weighing, Suspended	320
Machinery Nuts	330
Wood Working	154 to 159
Machinists' Callipers	227
Clamps	137
Hammers	196
Hand Taps	126
Levels	220
Squares	221
Vises	178 to 181
Magnetic Tack Hammers	197
Mail Car Pouch Hooks	314
Malleable Iron Hand Lamps	90
" Oilers	86
" Pipe Fittings	50
Mallets	198, 358
Calking and Hausing	356
Rawhide	198
Tinners'	198
Mandrels	135, 136, 208
Circular Saw	208
Saw	136
Manila Rope	276
Marine Boilers	295
Clocks	4
Lamps and Lanterns	95
Signals	355
Marking Brushes	237
Gauges	227
Marlin Spikes	355, 356
Masons' Hammers	195
Levels	220
Lines	276
Match Hooks and Thimbles	357
Planes, Iron Combination	215
Planes, Wood	219
Mattocks and Pick Mattocks	201
Maul Handles	206
Maule, Ship and Railroad	201
Track	242
Measures, Board, Log and Wood	223
Tin and Galvanized Iron	85

H  
I  
J  
K  
L  
M

## M

Measures, Yard, Steel.....	230
Measuring Tapes.....	223
Meat Wagons.....	259
Mechanics' Clamps.....	137
Melting Ladles.....	115
Pots.....	115
Metal, Babbit.....	338
Muntz.....	338
Metals.....	338
Mica Disc Valves.....	59
Mill Picks.....	201
Saws.....	209
Wind, Pumps.....	25
Milling Cutters.....	139
Machine Vises.....	149
Machines.....	150
Mills, Saw, Circular.....	296
Wind.....	37
Millwrights' Augers.....	168
Squares.....	230
Miners' Forges.....	185
Hand Lamps.....	90
Lamps.....	90
Picks.....	201
Safety Lamps.....	90
Tacks.....	334
Mining Cars.....	260
Picks.....	201
Pumps, Steam.....	32
Spikes.....	335
Mitre Boxes.....	212
Mop Handles.....	355
Mops, Cotton.....	355
Pitch.....	355
Yacht.....	355
Mortar Barrows.....	255
Fire.....	234
Hoes.....	202
Mortising Chucks.....	158
Machines.....	158
Moulders' Bellows.....	234
Riddles.....	235
Shovels.....	203, 234
Tools.....	233
Moulding Sand.....	234
Movers, Car.....	245
Moving Machine Oilers.....	86
Mud Extractors.....	56
Mulay Saws.....	209
Mule Stands.....	308
Muntz Metal.....	338
Mushroom Strainers.....	58
Music Wire Gauges.....	229

## N

Nail Gimlets.....	170
Hammers.....	197
Pullers.....	198
Sets.....	198
Nails, Clinch.....	335
Clout.....	334
Cut.....	335
Finishing.....	334
Horse Shoe.....	335
Trunk.....	334
Wire.....	335
Napping Hammers.....	195
Naphtha.....	108
Needles, Packing.....	355
Sack.....	355
Sail.....	355
Night Signals.....	355
Nippers, Cutting.....	224, 225
Nipple Chucks.....	117
Nipples, Pipe Fittings.....	48, 49, 50
Soldering.....	50

## N

Nose Chisels, Plumbers'.....	114
Nosing Planes.....	217
Nozzles, Hose.....	101
Spray.....	101
Nut and Washer Gauges.....	229
Augers.....	168
Blanks, Thumb.....	333
Taps.....	127
Wrenches, Lightening.....	123
Nuts.....	329, 330
Lock.....	329
Machinery.....	329, 330
Sleeve.....	328

## O

Offsets, Pipe Fittings.....	41
Ogee Planes.....	218
Oil Cabinets.....	84, 85
Cans, Box Jacket, Pump, Square.....	85
Cups.....	73, 74, 78 to 81
" Dreyfus', Lonergan's, Sight Feed 78 to 81.....	
Engines.....	292
Fillers, Engineers'.....	89
Hose.....	100
Pumps, Hand Cylinder.....	75
Stone.....	313
Tanks.....	84, 85
Valves.....	65, 66, 67
Waste Cans.....	85
Well Tubing.....	47
Oiler Sets, Engineers'.....	88
Oilers, Locomotive.....	87
Tin, Zinc, Brass, etc.....	8 to 89
Oils.....	108
Open Links.....	277
Openers, Sash, Car Deck.....	342
Ore Barrows.....	255, 256
Breakers.....	298, 299
Buckets.....	278, 279
Crushers.....	298, 299
Forks.....	202
Outlet Valves, Tank.....	37
Overhead Railways.....	272
Ovolo Planes.....	218
Oyster Barrows.....	255

## P

Package Balances.....	320
Packing, Asbestos.....	106
Hooks and Screws.....	106
House Trucks.....	258
Metallic.....	106
Needles.....	355
Springs.....	106
Steam.....	106
Waste, Wool.....	106
Padlocks.....	349, 350
Jail.....	349
Pails, Grease.....	85
Indurated Fibre.....	353
Iron.....	353
Rubber.....	353
Stable.....	353
Water.....	353
Paint Brushes.....	238
Paints.....	108
Palms, Sailors'.....	355
Panel Planes.....	217
Saws.....	210
Pans, Drip, Urinal.....	45
Paper, Emery.....	108
Sand.....	108
Paraffine.....	108
Parallel Vises.....	178, 179
Park Settees.....	354

## P

Passenger Cars.....	262
Paste, Polishing.....	355
Patch Bolts, Boiler.....	324
Pattern Gauges.....	228
Letters.....	234
Pavers' Tools.....	241
Paving Hammers.....	241
Peg Awl Hafts.....	207
Awls.....	207
Perfection Oil Tanks.....	85
Phosphor Bronze.....	338
Pick Blanks.....	201
Handles.....	205
Picks, Railroad and Miscellaneous.....	201
Scaling.....	310
Tamping.....	201
Picture Cord, Wire.....	336
Pig Iron.....	338
Lead.....	338
Pillow Blocks for Shafting.....	306
Pliers, Carpenters'.....	225
Horse Shoeing.....	194
Pins, Bending, Plumbers'.....	114
Turn.....	114
Pipe, Chain Pump, Wood.....	46
Crows.....	115
Cutters.....	109, 111
Cutting Dies.....	117
" Machines.....	119, 120
" Off Machines.....	120
Drain.....	46
" Fittings for.....	46
" Portland Cement and Vitrified.....	46
Drill Reamers.....	110
Drills.....	115
Enameling.....	40
Fittings.....	39, 41, 42, 46, 48, 49, 50, 51
" Brass.....	48, 49
" Cast Iron.....	41, 42
" Malleable Iron.....	50
" Portland Cement and Vitrified.....	46
" Railing.....	51
Gas, Wrought Iron.....	47
Gate Hinges.....	51
Hangers, Extension, Steam Fittings.....	52
Lead.....	42
Leader, Spiral Seam Riveted.....	38, 40
Machines.....	110
Pressure, Spiral Seam Riveted.....	39
Reamers.....	110
Rests.....	41
Sectional Sheets for.....	40
Sewer, Portland Cement and Vitrified.....	46
Shoes, Leader.....	40
Slicks, Moulders'.....	233
Smoke.....	40
Soil, Cast Iron.....	40
Spiral Seam Riveted.....	38, 39
Steam Wrought Iron.....	47
Stocks and Dies.....	109, 110
Straight Seam and Riveted.....	40
Straps.....	50
Swivels.....	328
Tapping Machines.....	115
Taps.....	110
Threading Chasers.....	115
" Machine Chucks.....	118
" Machines.....	119, 120
Tips, Hose.....	101
Tongs.....	113
Vises.....	116, 117
Water, Cast Iron.....	40
" Wood.....	46
" Wrought Iron.....	47
Waste, Lead.....	42
Wrenches.....	111, 112, 113
" Chain.....	113
Pipes, Blow.....	114



## P

Pipes, Hose.....	101
Play, Rubber.....	100
Piston Rods.....	309
Pit Saws.....	209
Pitch.....	168
Mops.....	355
Pivots, Sash, Car Deck.....	342
Plane Handles.....	206
Irons.....	214, 219
Planer Centers.....	149
Chucks.....	148, 149
Planers.....	150
Planes, Iron.....	214, 215
Wood.....	216 to 219
Planing Machines, Metal.....	150
"  Wood.....	159
Planishing Hammers.....	197
Plantation Cars.....	242
Scales.....	322
Planters' Hoes.....	202
Plastering Trowels.....	232
Plate Iron.....	337
Steel.....	337
Plates, Ceiling, Steam Fittings.....	52
Expansion "  ".....	52
Fifth Wheel.....	193
Floor, Steam Fittings.....	52
Hook "  ".....	52
Screw and Solid Screw.....	123, 124
Stencil, Revolving.....	234
Surface.....	231
Tire.....	193
Platform Cages.....	279
Scales.....	321
Play Pipes.....	100
Pliers.....	224
and Wire Cutters.....	224
Gas.....	113
Side Cutting.....	224
Plow Bolts.....	325
Plows.....	251, 252
(Planes).....	215, 219
Breaking and Grading.....	252
Contractors'.....	252
Grooving (Planes).....	219
Railroad.....	251
Road.....	252
Plumb Bobs.....	231, 232
Plumbago Crucibles.....	234
Plumbs and Levels.....	220
and Levels, adjustable.....	220
Plug and Feathers.....	241
Taps.....	126
Plugs, Bath or Sink.....	44
Fusible.....	11
Pipe Fittings.....	41, 48, 49, 50
Plumbers' Hydraulic Pressure Pumps.....	24
Tools.....	114, 115
Torches.....	89
Pocket Levels.....	220
Oilers.....	86
Speed Indicators.....	4
Tapes.....	223
Wrenches.....	172
Pointers, Dowel.....	171
Pointing Trowels.....	232
Points, Glaziers'.....	334
Trammel.....	231
Police Lanterns.....	94
Polishing Belts.....	319
Heads.....	319
Lathes.....	318, 319
Paste.....	355
Prestoline.....	355
Supplies.....	319
Poll Picks.....	201
Pop Safety Valves.....	62, 63
Pope's Eye Brushes.....	236

## P

Pope's Head Brushes.....	236
Portable Engine Valves.....	63
Railroad Track.....	263
Post Hole Augers.....	205
"  Diggers.....	205
Lamps.....	99
Posts, Drilling.....	165
Pot Hooks.....	115
Potash.....	355
Pots, Glue.....	53
Melting.....	115
Salinometer.....	6
Watering.....	353
Pouch Hooks, Mail Car.....	344
Power Forges.....	184, 185, 186
Horse.....	37, 281
Presses, Copying.....	353
Pressure Damper Regulators.....	12, 13
Gauges.....	1, 2, 3
"  German Style.....	2
"  Water.....	3
Pumps, Hydraulic, Plumbers'.....	24
Recording Gauges.....	5
Regulators.....	12, 13
Safety Valves, Low.....	60
Valves, Back.....	60, 61
Prestoline.....	355
Prickers, Sailmakers'.....	355
Pritchels.....	195
Protractors.....	231
Pruning Saws.....	210
"  and Knives.....	211
Puddling Bars.....	241
Pullers, Spike.....	242
Stump.....	251
Pulley Blocks.....	268
"  (Hoists).....	270, 271
Taps.....	127
Stands.....	307, 308
Pulleys, Balanced.....	302 to 304
Bell Cord.....	342
Clamp Hub.....	304
Flange.....	304
Friction Clutch.....	309
Loose.....	304
Split.....	302 to 304
Pulling Jacks.....	250
Pulls, Gong.....	8
Sash, Car Deck.....	342
Pulsometer Steam Pumps.....	35
Pumice Stone.....	102, 319
Pump and Test Gauges.....	5
Cylinders.....	23
Pipe, Wood.....	46
Rods.....	309
Valves.....	60
Pumping Engines, Gas and Hot Air.....	293
Wind Mills.....	37
Pumps, Air.....	24
Bilge.....	27
Car Saloon.....	345
Boilers Feed.....	29, 34
"  Testing.....	5
Centrifugal.....	28
Cistern and Well.....	22
Force.....	24 to 28
Oil, Hand Cylinder.....	75
"  Tin.....	85
Plumbers' Hydraulic Pressure.....	24
Ships' Main or Bilge.....	27
Steam.....	29 to 35
"  combined with Boilers.....	32, 33, 34
Suction or Bilge.....	27
Syphon, Steam.....	35
Punches and Shears.....	311
Belt.....	105
Chain.....	358
Conductors' and Ticket.....	351, 352

## P

Punches, Cutting.....	356
Drive, Round.....	105
Hydraulic Lever and Screw.....	311
Spring, Common and Revolving.....	105
Stamp.....	195
Track.....	242
Push Brooms.....	235
"  Handles for.....	235
Cars.....	252
Carts.....	250
Pushers, Car.....	245
Putty Powder.....	319
Pyrometer Steam Gauges.....	3
Pyrometers.....	6

## Q

Quadrants, Car Deck Sash.....	342
Quarry Chain.....	358
Tools.....	241
Quartz.....	319

## R

Rabbit Planes.....	217
Racking Cocks.....	43
Racks, Car, Basket.....	344
Radiator Angle Valves.....	59
Valves.....	59, 61
Rafting Chain.....	358
Rail Benders.....	243, 244
Foot Brackets and Fittings for.....	51
Forks.....	242
T.....	263
Railing Fittings, Malleable Iron.....	51
Railroad Adzes.....	199
Augers.....	168
Barrows.....	254, 255
Brooms.....	236
Car Urinals, Hoppers, etc.....	45
Carts, Contractors'.....	259
Crossings.....	265
Depot Settees.....	354
Jacks.....	248
Lamps and Lanterns.....	92, 93, 94
Lining Bars.....	241
Mauls.....	201
Picks.....	201
Plows.....	251
Signal Torches.....	355
Signals.....	355
Spikes.....	335
Station Lamps.....	91
Supplies, Miscellaneous.....	355
Syphons.....	35
Tamping Bars.....	241
Tank Valves.....	36, 37
Tanks.....	37
Track, Portable.....	263
"  Tools.....	242
Trucks.....	258
Water Columns.....	36
"  Stations.....	35
Railways Overhead.....	272
Rakes.....	202
Rammers, Sand.....	241
Stone, Cobble and Belgian.....	241
Rams, Hydraulic.....	30
Rasps and Files.....	174
Ratchet Bit Braces.....	167
Drills.....	165, 166
Jacks.....	247, 248
Wrenches.....	173
Rawhide Lace Leather.....	103
Mallets.....	198
Reamer Holders, Chucking.....	139

## R

Reamer Wrenches.....	123, 124
Reamers, Adjustable.....	135
Boiler Makers'.....	310
Machinists'.....	131 to 135
Pipe and Pipe Drill.....	110
Recording Gauges, Pressure.....	5
Red Lead.....	108
Reducers, Pipe Fittings.....	39, 41, 46
Reels, Chalk Line.....	102
Reflectors for Head Lights.....	93
Regulators, Automatic Pressure.....	13
Damper.....	13
Pressure.....	12, 13
Steam and Fire.....	12
Relief Valves, Cylinder.....	63
Replacers, Cars.....	244, 245
Rests, Pipe Fittings.....	41
Slide.....	138
Return Bends, Pipe Fittings.....	41, 48, 49, 50
Revolution Counters.....	4
Riddles, Moulders'.....	235
Ring Augers.....	168
Bolts, Screw.....	358
Plates, Steam Fittings.....	52
Rings, End, Bell Cord.....	342
Steam Fittings.....	52
Rivet Clippers.....	192
Headers and Sets.....	104
Sets.....	310
Riveting Hammers.....	196
"    Boiler Makers'.....	310
Rivets, Barrel.....	324
Relt.....	324
Boiler.....	324
Bridge.....	324
Coopers'.....	324
Copper.....	105, 324
Hame.....	324
Ship.....	324
Trunk.....	324
Road Levelers.....	252
Machines.....	252
Plows.....	252
Scrapers.....	253
Rock Breakers.....	298, 299
Drills, Steam.....	297
Rods, Gauging.....	222
Piston and Pump.....	309
Pump.....	309
Saw.....	211
Rolling Mill Scales.....	321
Roof Brushes.....	238
Rooter Plows.....	252
Rope, Braided.....	216
Fittings, Wire.....	274, 275
Hoists.....	269
Manilla and Sisal.....	276
Wire.....	275
Wrecking.....	245
Ropes, Tiller.....	275
Rosin.....	108
Boxes, Plumbers'.....	114
Rotary Force Pumps.....	28
Rotten Stone.....	108
Rouge.....	319
Rubber Belting.....	103
Hose.....	100
Lined Cotton Hose.....	100
Pails.....	353
Suction Hose.....	100
Tubing.....	100
Rules, Boxwood and Ivory.....	221
Gear.....	230
Machinists' Calliper.....	227
Shrink.....	230
Square.....	230
Steel.....	230
Triangular.....	230

## S

S Hooks, Wrought.....	277
Wrenches.....	172
Sack Needles.....	355
Saddle Thimbles.....	357
Saddlers' Awls.....	207
Punches.....	105
Safe Ends for Boiler Tubes.....	47
Safety Chain.....	277
Combination Column, Steam and Water.....	11
Oil Cabinets, Wiley's.....	84
Valves.....	60 to 63
Sail Needles.....	355
Twine, Cotton.....	55
Sailmaker's Marlin Spikes.....	355
Prickers.....	355
Sailors' Palms.....	355
Sal Soda.....	355
Salinometer Hydrometers.....	6
Salinometers and Salinometer Pots.....	6
Salt Well Tubing.....	47
Sand Augers.....	23
Cloth.....	108
Fire.....	234
Moulding.....	234
Paper.....	108
Rammers.....	241
Screens.....	241
Sifters.....	235
Stone.....	313
White Bench.....	234
Sash Catches, Car Deck.....	342
Cord.....	275, 276
Fastenings, Locomotive Cab.....	340
Lifts and Locks, Car.....	340, 341
Openers, Car.....	342
Pivots and Pulls, Car.....	342
Quadrants.....	342
Tools.....	238
Trimmings, Car.....	341
Saw Arbors.....	155
Blades.....	157, 211, 212
"    Band and Scroll.....	157
Frames.....	211
Handles.....	206, 209
Mandrels.....	136, 208
Mills, Circular.....	293
Rods and Screws.....	211
Sets.....	212
Swages.....	212
Tables, Splitting.....	155
Vises.....	177, 180
Sawing Machines, Hand and Universal.....	155, 156
Saws, Band.....	157
Back.....	210
Butchers'.....	211
Circular.....	155, 208, 296
Compass.....	211
Cross-Cut.....	209
Cut-Off and Splitting.....	156
Gang, Mill, and Mulay.....	209
Hack.....	212
Hand and Panel.....	210
Key Hole and Kitchen.....	211
Pit.....	209
Pruning.....	210
"    and Knife.....	211
Scroll.....	154
"    Fret.....	157
Whip.....	209
Wood.....	211
Scale Beams.....	323
Scales, Baggage.....	322
Balance.....	320
Boxwood, Machinists'.....	230
Cart.....	322
Counter.....	321
Druggists' and Grocers'.....	321
Express.....	320

## S

Scales, Hay.....	322
Iron.....	321
Plantation.....	322
Platform.....	321
Rolling Mill.....	321
Tea.....	321
Triangular, Machinists'.....	230
Track.....	322
Wagon.....	322
Warehouse.....	322
Wheelbarrow.....	321
Scaling Picks.....	310
School Bells.....	9
Scoops.....	202, 204
Coal.....	204
Furnace.....	204
Screening.....	202
Scotia Planes.....	218
Scrapers, Box.....	213
Drag.....	253
Ice.....	354
Ship.....	356
Tube.....	239
Wheel.....	253
Scratch Awls.....	207
Screen Cloth, Window.....	337
Screening Shovels, and Scoops.....	202
Screens, Coal and Sand.....	241
Screw Blanks, Thumb.....	333
Clamps.....	175
Cutting Lathes.....	152
Driver Bits.....	170
"    Handles.....	206
Drivers.....	170, 171
"    Ratchet.....	170
Eyes, Bell Cord.....	342
Gauges.....	228
Hook Hinges.....	348
Jacks.....	247, 248
Pitch Gauges.....	229
Plates.....	123, 124
"    and Dies.....	124
"    and Pipe Cutters.....	109
"    Solid.....	124
Ring Bolts.....	358
Thread Gauges.....	229
Screws, Bench.....	176
Brass, Gimlet Pointed.....	334
Cap.....	332
Coach.....	325
Collar.....	332
Iron Gimlet Pointed.....	333, 334
Jack.....	251
Machine.....	333
Nickel Plated, Gimlet Pointed.....	333
Packing.....	106
Raising, House.....	251
Saw.....	211
Set.....	332
Thumb.....	333
Wood.....	333, 334
Scroll Iron.....	337
Saw Blades.....	157
Saws.....	154, 157
Scrubbing Brushes.....	238
Sealing Presses, Lead.....	351
Seals, Lead.....	351
Seam Pipe, Riveted.....	38, 39, 40
Seamless Tubes.....	47
Seat Arm Plates, Car.....	343
Arms, Car.....	343
Fittings, Car.....	343
Locks, Car.....	343
Sectional Sheets for Pipes.....	74
Self-Oilers, Dreyfus'.....	79
Separators and Hullers, Coffee.....	301
Service Cocks.....	69
Set Hammers.....	194

S	
Set Screws.....	332
Sets Rivet.....	310
Saw.....	211
Settees, Park and Railroad Depot.....	354
Setting Dies.....	356
Sewer Pipe, Cast Iron.....	40
" Cement and Vitrified.....	46
Traps, Cast Iron and Lead.....	42
" Cement and Vitrified.....	46
Sewing Awl Hafts.....	207
Awls.....	207
Machine Oilers.....	86
Shackles, Anchor and Chain.....	358
Connecting.....	277
Tin.....	351
Shades, Lamp.....	98
Shaft Couplings.....	306, 307
Shafting.....	309
Floor Stands for.....	305
Hangers for.....	305, 306
Shaper Centers.....	149
Shaping Machines.....	150
Shave Hooks.....	114
Shaves, Spoke.....	213
Shears, and Punches Combined.....	311
Bar Iron.....	311
Bench.....	310
Circular.....	310
Hand.....	310
Power.....	312
Sheath Knives.....	355
Sheaths and Belts.....	355
Sheaves for Blocks.....	267
for Derricks.....	274
Sheet Iron.....	337
Lead.....	42
Metal Gauges.....	228
Sheets, Pipe, Sectional.....	40
Shellac, Gum.....	108
Shingling Hatchets.....	198
Ship Augers.....	168
Bells.....	9
Mauls.....	201
Main or Bilge Pumps.....	27
Rivets.....	324
Scrapers.....	256
Shoe Brushes.....	238
Hammers.....	197
Nails.....	334
" Horse.....	335
Shoes, Leader Pipe.....	40
Shovels, Spades, and Scoops.....	262, 203, 204
Coal.....	204
Coffee.....	204
Fire.....	354
Moulders'.....	203, 234
Screening.....	202
Tamping.....	203, 204
Shrink Rules.....	230
Shrinkers, Tire.....	192
Side Lamps.....	91
Sifters, Sand.....	235
Signal Holders.....	355
Lamps.....	92
Torches.....	355
Signals, Marine Night.....	355
Night.....	355
Railroad.....	355
Sink Plugs.....	44
Sisal Rope.....	276
Sister Hooks and Thimbles.....	357
Skins, Chamols.....	355
Sledge Handles.....	206
Sledges, Blacksmiths'.....	195
Coal.....	195
Stone.....	195
Turning Horse Shoe.....	195
Sleeve Nuts.....	328

S	
Sleeves, Pipe Fittings.....	41
Slide Rests.....	138
Smooth Planes.....	215, 216
Snatch Blocks.....	267, 268
Snips.....	310
Snow Shovels.....	354
Soap.....	355
Dishes, Car Saloon.....	345
Soapstone Facings.....	234
Soda, Caustic.....	355
Sal.....	355
Soil Pipe, Cast Iron.....	40
" " " Fittings for.....	41, 42
Solder.....	338
Soldering Coppers.....	114
Nipples.....	50
Unions.....	50
Spades.....	203, 204
Spanish Pattern Axes.....	200
Speed Increasers (Jacks).....	37
Indicators.....	4
Spelter.....	338
Spindles for Buffing Lathes.....	318
Spike Gimlets.....	180
Pullers.....	242
Spikes, Marlin.....	355, 356
Mining.....	335
Railroad and Ship.....	335
Spiral Riveted Pipe and Fittings.....	38, 39
Split Pulleys.....	304
Splitting Saw Tables.....	155
Saws and Cut-Off.....	156
Spoke Shaves.....	213
Trimmers.....	171
Sponge Cloths.....	355
Sponges.....	355
Spoons, Moulders'.....	233
Quarry.....	241
Telegraph.....	203
Spouts and Fixtures for R. R. Tanks.....	37
Spray Nozzles.....	101
Spring Balances.....	320
Cotters.....	331
Dividers.....	225
Keys.....	331
Punches, Common and Revolving.....	105
Springs, Car.....	340
Check.....	8
Engine.....	340
Packing.....	106
Rubber for Cars.....	340
Sprinklers, Hose.....	101
Lawn.....	101
Square Corners and Straights, Moulders'.....	233
Squares and Hearts, Moulders'.....	233
Center, Machinists'.....	230
Millwrights'.....	230
Steel.....	221
" Machinists'.....	230
T, Draughtsmens'.....	231
Try.....	221, 230, 231
Squilleas.....	355
Squirt Cans, (Oilers).....	86 to 89
Stable Pails.....	353
Stamp Punches.....	195
Stamps, Steel.....	234
Standard Gauges.....	228
Standing Fids.....	355
Stands, Coil.....	52
Floor for Shafting.....	305
Pulley.....	307, 308
Switch.....	265
Wash.....	44
Station Lamps.....	91
Stationary Engines.....	288, 289
Stations, Water, Railroad.....	35
Stave Barrows.....	254
Stay Bolt Taps.....	127

S	
Stays, Chain.....	44
Steam and Fire Regulators.....	12
Bibbs.....	70
Cocks.....	69
Columns.....	11
Damper Regulators.....	13
Gauge Cocks, and Syphons.....	69
Gauges.....	1, 2, 3
Gongs.....	10
Glue Heaters.....	53
Hammers.....	312
Heating Coils.....	52
Hose.....	100
Pipe, Wrought Iron.....	47
Pumps.....	29 to 35
" Boiler Feed.....	29
Railroad Water Stations.....	35
Syphon Pumps.....	35
Syphons for Railroad.....	35
Traps.....	54, 55
Valves.....	57 to 67
Whistles.....	10
Steamboat Bells.....	9
Steel.....	338
Brooms.....	236
Plate and Tank.....	337
Rules.....	230
Squares.....	221
Straight Edges.....	230
Squares, Machinists'.....	230
Tapes.....	223
Triangles.....	231
Wire.....	336
Stencil Plates, Revolving.....	234
Step Gauges.....	228
Planes.....	217
Sticks, Bossing, Plumbers'.....	114
Yard.....	223
Stocks and Dies, Blacksmiths'.....	125
Machinists'.....	125
Pipe.....	109, 110
Stone Barrows.....	254
Breakers and Crushers.....	296, 299
Forks.....	202
Hammers.....	241
Oil.....	313
Picks.....	201
Pumice.....	108
Rammers.....	241
Rotten.....	108
Sand.....	313
Sledges.....	195
Stoppers or Plugs, Pipe Fittings.....	41
Stops, Brass.....	43
Store Trucks.....	256, 259
Stove Bolts.....	323
Brushes.....	238
Tools, Moulders'.....	233
Straight Edges.....	230, 231
Seam Riveted Pipe.....	40
Straightway Drills.....	130
Strainers.....	58
Foot Valves and.....	57
Mushroom.....	58
Strap Hinges.....	348
Straps, Hose.....	101
Street Hoes.....	202
Lamps.....	99
Main Gates.....	66
Stretchers, Fence Wire.....	336
Striking Hammers.....	195
Stub Switch Attachments.....	264
Stud Bolts.....	326
Student Lamps.....	91
Stamp Pullers.....	251
Suction Fittings.....	53
Hose.....	100
Pumps.....	27

## S

Suction Tees	53
Supplies, Railroad, Miscellaneous	355
Surface Gauges	227
Graders	252
Plates	231
Surveying Lamps	90
Swabs	234
Deck	355
Swage Blocks	193
Swages, Collar	194
Kilp	194
Saw	211
Top and Bottom	194
Sweat Cloths	355
Swing Joints	50
Swinging Check Valves	61
Switch Attachments, Stub	264
Lamps	92
Rope	245
Stands	265
Swivel Hooks with Thimbles	357
Vises	178, 179, 180
Swivels, Pipe	328
Syphon Pumps, Steam	35
Syphons, Acid	22
for Steam Gauges	69
Railroad, Steam	35

## T

T Bevels	221
Hinges, Wrought Iron	348
Rails	263
Squares, Machinists'	231
Table Lamps	91
Tables, Saw, Splitting	155
Turn	263
Tachometers	4
Tack, Claws	197
Hammers	197
Tacks, Cut and Miscellaneous	334
Carpenter	334
Tackle Blocks	266 to 268
Hooks and Thimbles	357
Tallow Cans	89
Tamping Bars	241
Picks	201
Shovels	203, 204
Tang Firmer Chisels	213
Tank Fixtures	37
Valves	36, 37
Tanks, Oil	84, 85
Railroad	37
Water, for Forges	185, 186, 187
Tap Bolts	326
Borers	114, 171
Wrenches	123, 124
Tape Measures	223
Taper Taps	126
Tapping Machines, for Fittings	118
"    Pipe	115
Taps, Dies and	126
Dies and Holders	123
Hub	127
Machine	127
Nut	127
Machine, Hand and Screw	126
Pipe	110
Plug	126
Pulley	126
Stay Bolt	127
Taper	123
Tar	108
Brushes	237
Target Lamps	92
Tea Scales	321
Tees for Cement and Vitriified Drain Pipe	46
Pipe Fittings	39, 48, 49, 50

## T

Telegraph Pliers	224
Spoons	203
Wire	336
Telephone Bits	170
Wire	338
Telescope Jacks	250
Test Gauges	1
"    Pumps and	5
Testing Apparatus, Gauge	5
Thalpotasimeters	6
Thermometers, Angle, and Common	6
High Grade and Hot Well	6
Salinometer and Uptake	6
Thimbles, Lip, Open and Saddle	357
with Hammock, Sister, Swivel and Tackle	
Hooks	357
Threading Machines, Bolt	120
"    Pipe	119, 120
Throttle Valves	60
Thumb Nut Blanks	333
Screw	333
Screws	333
Ticket Daters	352
Tighteners, Belt	104
Tiller Ropes	275
Timber Jacks	249
Time Detectors, Watchmen's	7
Tin, Block	338
Plates	339
Tinners' Mallets	198
Tire Benders	191
Bolts	327
Measuring Wheels	192
Plates	193
Shrinkers	192
Tires, Car and Locomotive	338
Tool Grinders	316, 317
Grinding Machines	316, 317
Handles Patent	207
Tools, Belt	104, 105
Bending	194
Blacksmith's	194
Calking	356
Cutting Off	139
Heading	194
Horse Shoers'	195
Lathe	138
Moulders'	233
Pavers'	241
Plumbers'	114, 115
Quarry	241
Sash (Brushes)	238
Track, Railroad	242
Turning Diamond	313
V, Blacksmiths'	194
Tongs, Blacksmiths'	194
Pipe	113
Top Fullers	194
Mauls	201
Swages	194
Torch Lamps	90
Torches, Gasoline and Vapor	90
Hand	90
Locomotive	89
Plumbers'	89
Signal, Railroad	355
Wall	90
Torpedoes, Track	355
Township Plows	252
Track Bolts	326
Brooms	236
Chisels	242
Drills	243
Gauges	242
Jacks	245, 246
Levels	242
Mauls	242
Portable R. R.	263

## T

Portable R. R. Punches	242
Scales	322
Tools	242
Torpedoes	355
Wrenches	242
Trade Lanterns	90
Trammel Points	231
Traps, Cast Iron	42
Lead	42
Portland Cement	46
S	42
Steam and Steam Return	54, 55
Travelers for Overhead Railway	272
Traversing Jacks	248
Triangles	231
Trimmers, Lamp	98
Spoke	171
Trip Gongs	8
Tripoli	108, 319
Trolleys	272
Trowels	232, 233
Moulders'	233
Trucks Bag	252
Barrel	258
Box	257
Cotton	258
Dry Goods	259
Hook and Ladder	102
Store	258
Wagon	259
Warehouse	258
Trunk Nails	334
Rivets	324
Try Squares	221, 230
Machinists'	230
Tube Brushes	239
Cleaners	239, 240
Compound, Boiler	107
Expanders	310
Scrapers	239
Tubes, Boiler, and Repairing	47
Brass	47
Bronze	47
Copper	47
Glass for Water Gauges	72
Hydraulic	47
Seamless, Brass and Copper	47
Zinc	47
Tubing, Artesian Well	47
Gas Well	47
Lead	42
Oil Well	47
Rubber	100
Salt Well	47
Tubs, Bath, Copper and Zinc	44
"    Fittings for	44
Coaling	279
Tubular Boilers	294, 295
Hand Lamps	91
Lanterns	94
Turnbuckles	328
Turning Tools, Diamond	313
Sledges, Horse Shoe	195
Turn Pins, Plumbers'	114
Turntables, R. R.	283
Turpentine	108
Tuyere Irons	190
Twine, Sail, Cotton	355
Twist Drill Gauges	229
"    Grinding Machines	317, 318
Drills	128 to 130

## U

Unions, "American"	51
Brass	49
Flange	48, 49

U

Unions, Pipe Fitting.....	48, 49
Soldering.....	50
Universal Angular Bit Stocks.....	167
Upright Boilers.....	290, 295
Engines and Boilers.....	290
Urinal Handles, R. R. Car.....	345
Drip Pans.....	45
Urinals.....	45

V

Vacuum Gauges.....	1, 2
Valves.....	60
Valve Chambers, Governor.....	14, 16
Discs.....	58
Foot and Strainers.....	57
Valves Anglo.....	57 to 60
Asbestos Disc.....	61
Back Pressure.....	60, 61
Balance.....	60
Butterfly.....	60
Check.....	57, 58, 59
Cross.....	57 to 61
Cylinder Relief.....	63
Elevator.....	64
for Ammonia.....	64
Frinks'.....	58
Gate.....	65 to 67
Globe.....	57 to 61
Governor.....	64
Hose, Globe.....	59
Jenkins'.....	58
Low Pressure Safety.....	60
Mica Disc.....	59
Pop Safety.....	62, 63
Portable Engine.....	63
Pump.....	60
Radiator.....	59, 61
Safety.....	58 to 63
Tank.....	30
Throttle.....	60
Vacuum.....	60
Whistle.....	60
Y., Adams' Patent.....	59
Vapor Torches.....	90
Varnish Brushes.....	238
Varnishes.....	108
Ventilating Pipe.....	38
Vise Boxes and Screws.....	181
Chucks.....	149
Clamps.....	137, 178
Vises, and Anvils Combined.....	193
and Drills.....	164
Chain.....	181
Chipping.....	180
Coach Makers'.....	178, 179
Combination.....	116, 117
Hand.....	178
Horse Shoers'.....	181
Jewelers'.....	178
Leg.....	181
Milling Machine.....	149
Machinists'.....	178 to 181
Pipe.....	116, 117
Parallel.....	179
Saw.....	177
Swivel.....	178 to 180
Wood Workers'.....	179, 180
Vitrified Drain Pipe and Fittings.....	46
V Tools.....	194

W

Wagon Jacks.....	251
Scales.....	322
Trucks.....	259

W

Wagons, Baggage.....	257
Grain and Meat.....	259
Wall Brushes.....	236
Coils.....	52
Frames for Journal Boxes.....	306
Lamps.....	91
Torches.....	90
Walrus Leather.....	319
Wantage Rods.....	223
Warehouse Balances.....	320
Scales.....	322
Trucks.....	258, 259
Wash Basins, Car Saloon.....	345
Stands.....	44
Washer Cutters.....	105
Gauges.....	229
Washers.....	328
Nut Locking.....	329
Waste Baskets for Cotton Waste.....	89
Cans, Oil.....	85
Machinery.....	106
Waste Nuts, Pipe Fittings.....	50
Packing, Wool.....	106
Watchman's Clocks.....	7
Time Detectors.....	7
Water Alarms, Low, High and Low.....	11
Buckets.....	279
Closet Cases.....	45
" Cisterns.....	45
Closets.....	45
Columns, Gauge.....	11
" Railroad.....	36
Coolers.....	353
Elevators or Ejectors.....	22
Gauges and Glass Tubes for.....	72
" Low.....	12
Heaters, Feed.....	53
Pails.....	353
Pipe, Cast Iron.....	40
" " " Fittings for.....	41, 42
" Wood.....	46
" Wrought Iron.....	47
Pressure Gauges.....	3
Tank Fixtures.....	37
Tanks for Forges.....	125, 186, 187
Tapping Machines.....	115
Watering Pots.....	353
Wax Flower Wire.....	336
Weavers' Pliers.....	224
Weighing Bottoms, Cradles and Hooks.....	323
Jacks.....	246
Machines, Suspended.....	320
Weighmasters' Frames.....	323
Scale Beams.....	323
Well and Cistern Pumps.....	23
Cylinders for Pumps.....	23, 24
Points.....	23
Tubing.....	24
Whalebone Tube Brushes.....	239
Wharf Barrows.....	255
Cranes.....	272
Wheelbarrow Scales.....	321
Wheelbarrows.....	254 to 257
Iron.....	257
Steel.....	256
Wood.....	254, 255
Wheel Dressers, Emery.....	313
Plates, Fifth.....	193
Wheels, Buffing.....	319
Car.....	338, 339
Corundum.....	313
Emery.....	313
for Power Transmission.....	274
Hoisting, Iron.....	274
Whip Saws.....	209
Whistle Valves.....	60
Whistles, Steam.....	10
White Lead.....	108

W

White Lead Wash Brushes and Heads.....	238
Wicks.....	98
Winches, Derrick.....	280
Revolving.....	280
Wind Mill Force Pumps.....	25
Mills.....	37
Window Brushes.....	236, 237
Buttons, Car.....	341
Lifts, Car.....	341
Locks, Car.....	340
Trimmings, Car.....	341
Screen Cloth.....	337
Wire, Annealed.....	336
Brads.....	335
Brass and Copper.....	336
Cloth.....	337
Clothes Lines.....	336
Fence, Barbed and Twisted Ribbon.....	336
Gauges.....	228, 229
Iron and Steel.....	336
Nails.....	335
Picture Cord.....	336
Rope.....	275
" Fittings.....	274, 275
Stretchers.....	336
Telegraph and Telephone.....	336
Wax Flower.....	336
Wood Chisels, Plumbers'.....	114
Measures.....	223
Saw Blades.....	211
" Frames.....	211
Saws.....	211
Screw Cutters.....	124
Turning Lathes.....	154
Workers' Vises.....	178 to 180
Working Machinery.....	159
Wrecking Cars.....	262
Rope.....	245
Wrench Attachments.....	111
Wrenches, Alligator.....	113
Bridge Builders'.....	173
Chain Pipe.....	113
Cock.....	69
Coe's.....	173
Combination.....	112, 112½
Cross Rim.....	102
Diagonal and Diamond.....	172
Dog.....	138
Engineers'.....	112, 172
Fish Joint Bolt.....	173
Keg.....	172
Lag Screw.....	173
Lathe.....	138
Nut.....	123, 124
Nut and Pipe.....	112
Pipe.....	111, 112, 113
Pocket.....	172
Ratchet.....	173
Reamer.....	123, 124
S.....	172
Screw.....	173
Tap.....	123, 124
Track.....	242

Y

Y Branches.....	41, 148, 149
Valves.....	59
Yacht Lanterns.....	95
Mops.....	355
Yankees, Moulders'.....	233
Yard Measures Steel.....	230
Sticks.....	223
Yoke Frogs.....	264

Z

Zinc, Sheet.....	338
------------------	-----

S  
T  
U  
V  
W  
Y  
Z



# AMERICAN STEAM AND VACUUM GAUGES.

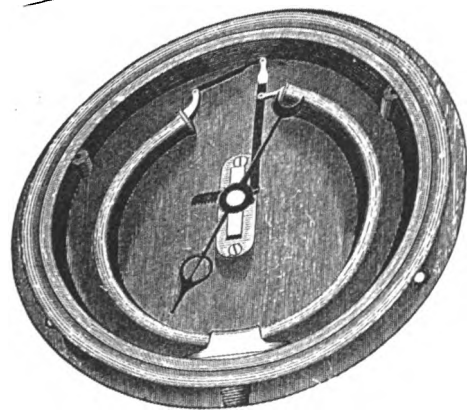


Fig. 1.  
LANE IMPROVED MOVEMENT.

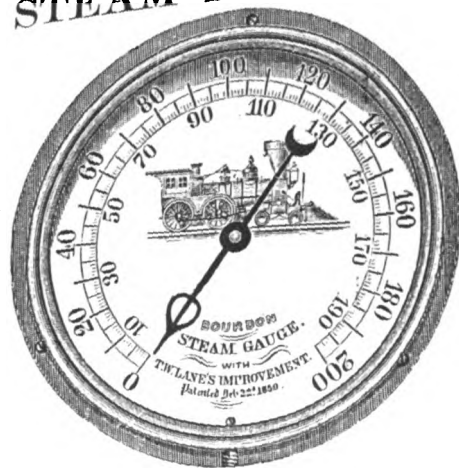


Fig. 2.

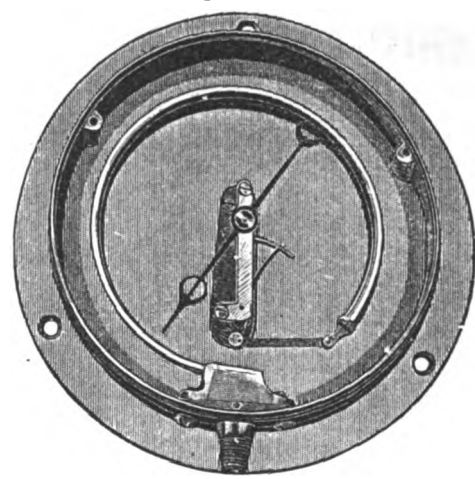


Fig. 3.  
BOURDON MOVEMENT.

The Lane Improvement removes all the objectionable features of the Bourdon Gauge, in preventing vibration of the hand, and in preventing freezing up the spring in case of exposure.

Prices, including Cocks, for Gauges Three Hundred Pounds or less.

BRASS CASE, POLISHED.		IRON CASE, JAPANNED.	
12-inch dial.....	\$80.00	12-inch dial.....	\$55.00
10 " .....	45.00	10 " .....	37.00
8 1/2 " .....	34.00	8 1/2 " .....	25.00
6 3/4 " .....	22.00	6 3/4 " .....	18.00
6 " .....	18.00	6 " .....	15.00
5 1/2 " .....	14.00	5 1/2 " .....	12.00
4 1/2 " .....	12.00	4 1/2 " .....	10.00

Octagon rings extra.

This excels any other instrument for sensitiveness and accuracy, but is best adapted for measuring low steam pressure and vacuums, or wherever a very delicate instrument is required.

Prices, including Cocks, for Gauges Three Hundred Pounds or less.

BRASS CASE, POLISHED.		IRON CASE, JAPANNED.	
12-inch dial.....	\$75.00	12-inch dial.....	\$50.00
10 " .....	40.00	10 " .....	32.00
8 1/2 " .....	30.00	8 1/2 " .....	22.00
6 3/4 " .....	20.00	6 3/4 " .....	16.00
6 " .....	16.00	6 " .....	13.00
5 1/2 " .....	12.00	5 1/2 " .....	10.00
4 1/2 " .....	10.00	5 " .....	8.00
3 1/2 " .....	9.00	4 1/2 " .....	8.00
3 " or smaller ....	8.00	3 1/2 " .....	7.00
		3 " or smaller ....	6.00

Octagon rings extra.

## CROSBY IMPROVED PRESSURE GAUGES.

WITH COMPOSITION CASE, O. G. RING AND COCK.		IRON CASE, JAPANNED.	
12-inch dial.....	\$80.00	6-inch dial.....	\$18.00
10 " .....	45.00	5 1/2 " .....	14.00
8 1/2 " .....	34.00	4 1/2 " .....	12.00
6 3/4 " .....	22.00		

WITH IRON CASE, BRASS O. G. RING AND COCK.		IRON CASE, JAPANNED.	
12-inch dial.....	\$55.00	6-inch dial.....	\$15.00
10 " .....	37.00	5 1/2 " .....	12.00
8 1/2 " .....	25.00	4 1/2 " .....	10.00
6 3/4 " .....	18.00		

No Crosby Gauge less than 4 1/2 inch dial.

## CROSBY BOURDON PRESSURE OR VACUUM GAUGES.

WITH COMPOSITION CASE, O. G. RING AND COCK.		IRON CASE, JAPANNED.	
12-inch dial.....	\$75.00	5 1/2-inch dial.....	\$12.00
10 " .....	40.00	4 1/2 " .....	10.00
8 1/2 " .....	30.00	3 1/2 " .....	9.00
6 3/4 " .....	20.00	3 " or smaller...	8.00
6 " .....	16.00		

WITH IRON CASE, BRASS O. G. RING AND COCK.		IRON CASE, JAPANNED.	
12-inch dial.....	\$50.00	5 1/2-inch dial.....	\$10.00
10 " .....	32.00	5 " .....	8.00
8 1/2 " .....	22.00	4 1/2 " .....	8.00
6 3/4 " .....	16.00	3 1/2 " .....	7.00
6 " .....	13.00	3 " or smaller...	6.00

## UTICA STEAM GAUGES.

IRON CASE.		STEAM METAL CASE.	
No. A, 3 1/2 inch, for Air.....	\$4.50	No. 2 1/2, 3 1/2-inch, Pressure.....	\$7.00
" O, 3 1/2 " " Steam.....	4.50	" 3, 5 " " .....	10.75
" 1, 5 " Pressure.....	6.00	" 4, 6 " Stationary.....	13.00
" 2, 6 " " .....	7.50	" 5, 6 " High Pressure.....	14.00
" B, 6 3/4 " " or Vacuum.....	9.00	" 6, 6 3/4 " Locomotive, Stationary or Vacuum.....	16.00

Gauge Cocks furnished with all Gauges except Nos. A, O and 2 1/2.

STEAM METAL CASE.		STEAM METAL CASE.	
No. 2 1/2, 3 1/2-inch, Pressure.....	\$7.00	No. 2 1/2, 3 1/2-inch, Pressure.....	\$7.00
" 3, 5 " " .....	10.75	" 3, 5 " " .....	10.75
" 4, 6 " Stationary.....	13.00	" 4, 6 " Stationary.....	13.00
" 5, 6 " High Pressure.....	14.00	" 5, 6 " High Pressure.....	14.00
" 6, 6 3/4 " Locomotive, Stationary or Vacuum.....	16.00	" 6, 6 3/4 " Locomotive, Stationary or Vacuum.....	16.00
" 7, 8 " Pressure or Vacuum.....	23.50	" 7, 8 " Pressure or Vacuum.....	23.50
" 8, 8 1/2 " " .....	26.75	" 8, 8 1/2 " " .....	26.75
" 9, 10 " " .....	35.00	" 9, 10 " " .....	35.00

## LOCOMOTIVE GAUGES.

IRON CASE.		STEAM METAL CASE.	
No. B, Iron Case, 6 3/4-inch dial, 8 1/2-inch back.....	\$10.00	No. 2 1/2, 3 1/2-inch, Pressure.....	\$7.00
" 5, Brass " 6 " 7 1/8 " .....	14.00	" 3, 5 " " .....	10.75
" 6, " " 6 3/4 " 8 1/2 " .....	16.00	" 4, 6 " Stationary.....	13.00

## TEST GAUGES.

IRON CASE.		STEAM METAL CASE.	
No. B, 6 3/4-inch, Iron Case, 300 lbs.....	\$13.00	No. 2 1/2, 3 1/2-inch, Pressure.....	\$7.00
" 7, 8 " Ornamented dial, 300 lbs., Brass Case.....	28.50	" 3, 5 " " .....	10.75
" 8, 8 1/2 " " " " .....	32.00	" 4, 6 " Stationary.....	13.00
" 9, 10 " " " " .....	40.00	" 5, 6 " High Pressure.....	14.00



Fig. 4.

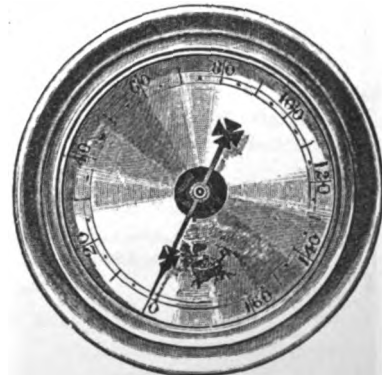


Fig. 5.







## COMPOUND GAUGE.

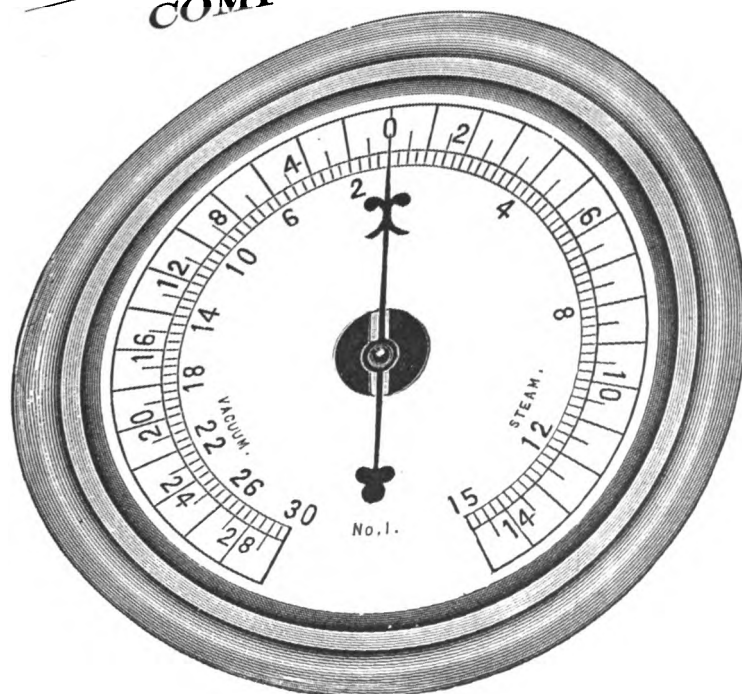


Fig. 10.

This Gauge is graduated by two mercury columns, showing pressure and vacuum, and is warranted absolutely correct. Use a siphon always. The pressure usually ranges from 15 to 60 lbs. In ordering, state the pressure desired.

### Prices, including Cock.

BRASS CASES.		IRON CASES, JAPANNED.	
12-inch dial.....	\$80.00	12-inch dial.....	\$60.00
10 ".....	50.00	10 ".....	40.00
8 1/2 ".....	40.00	8 1/2 ".....	30.00
6 3/4 ".....	25.00	6 3/4 ".....	20.00
6 ".....	20.00	6 ".....	18.00
5 1/2 ".....	16.00	5 1/2 ".....	14.00

## COMBINATION GAUGE.

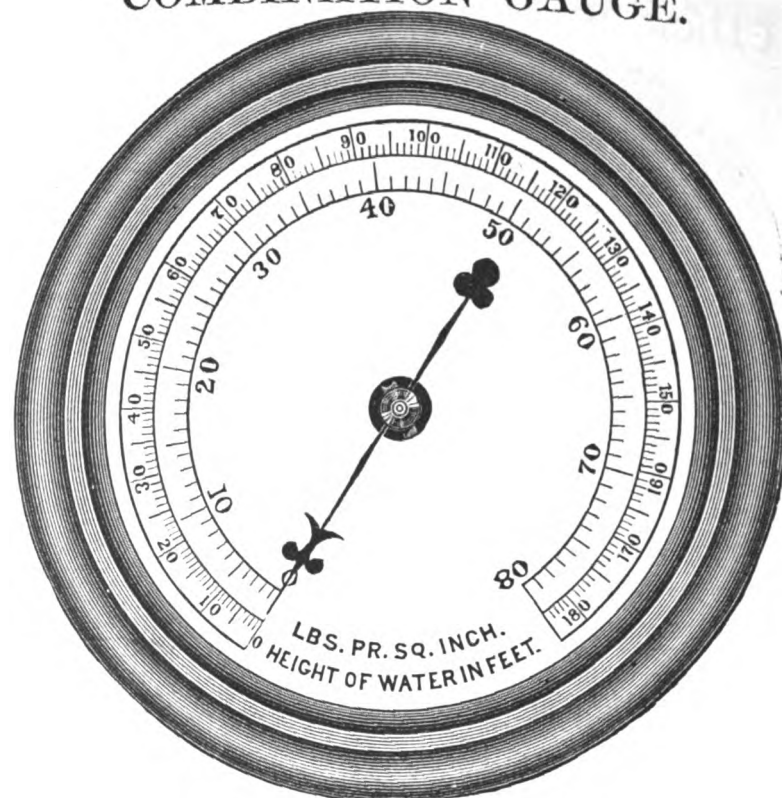


Fig. 11.

For indicating the height and pounds pressure per square inch of water in reservoir, stand-pipe or pumping station.

### Prices, including Cock.

BRASS CASES.		IRON CASES, JAPANNED.	
12-inch dial.....	\$80.00	12-inch dial.....	\$60.00
10 ".....	50.00	10 ".....	40.00
8 1/2 ".....	40.00	8 1/2 ".....	30.00
6 3/4 ".....	25.00	6 3/4 ".....	20.00
6 ".....	20.00	6 ".....	18.00
5 1/2 ".....	16.00	5 1/2 ".....	14.00

## PYROMETER STEAM GAUGE.

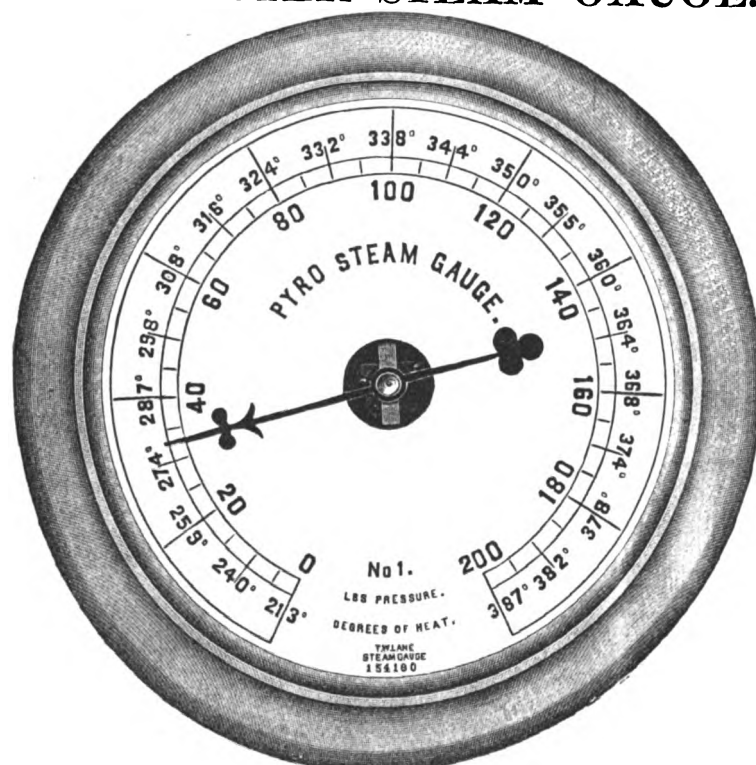


Fig. 12.

This Gauge is intended to indicate pounds pressure per square inch, and the corresponding degrees of heat (Fahrenheit) on the same dial.

### Prices, including Cock.

BRASS CASES.		IRON CASES, JAPANNED.	
12-inch dial.....	\$80.00	12-inch dial.....	\$60.00
10 ".....	50.00	10 ".....	40.00
8 1/2 ".....	40.00	8 1/2 ".....	30.00
6 3/4 ".....	25.00	6 3/4 ".....	20.00
6 ".....	20.00	6 ".....	18.00
5 1/2 ".....	16.00	5 1/2 ".....	14.00

## AMMONIA GAUGE.

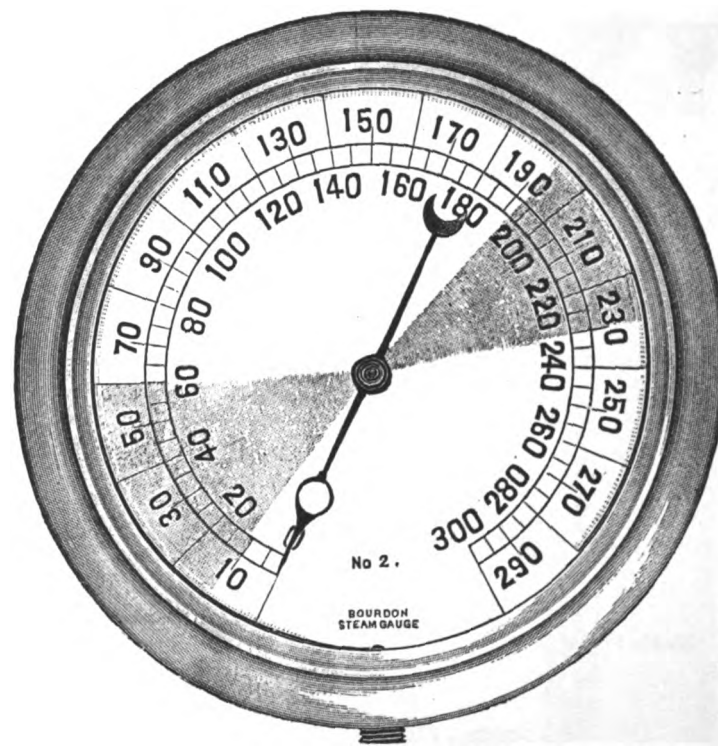


Fig. 13.

This Gauge is made with a tempered steel spring, same as used in hydraulic gauges, to withstand ammonia, or acids, or liquids, which brass will not withstand.

### Prices.

#### IRON CASE, WITH BRASS RING.

8 1/2 inch dial.....	\$45.00
6 3/4 ".....	40.00
6 ".....	35.00



THORNTON N. MOTLEY, NEW YORK.

5

# BLACK WALNUT FRAMES FOR SETS OF GAUGES, CLOCKS AND REVOLUTION COUNTERS.

For Engine-Rooms of Factories, Mills, Water-Works, Steamships, Etc.  
The cuts, Figs. 25 and 26, represent sample frames, of which I can furnish a variety in design and finish.

## Prices Black Walnut Frames.

Figs. 25 and 26.				
Frame for 5 x 8 1/2-inch dial instruments				\$50.00
"	"	"	"	40.00
"	"	"	"	35.00
"	"	"	"	30.00
"	"	"	"	40.00
"	"	"	"	35.00
"	"	"	"	30.00

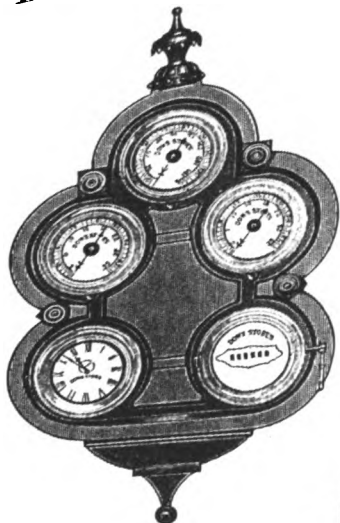


Fig. 25.

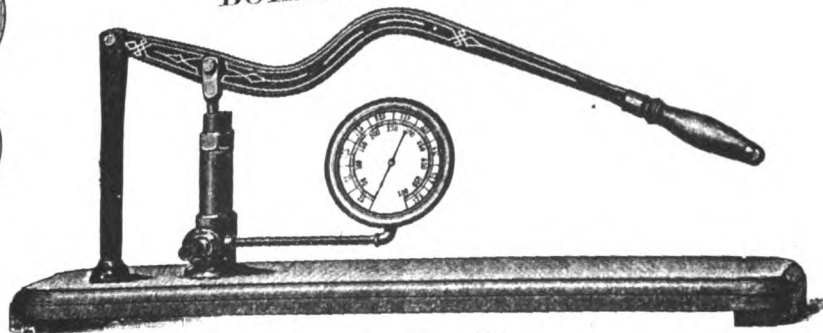


Fig. 27.

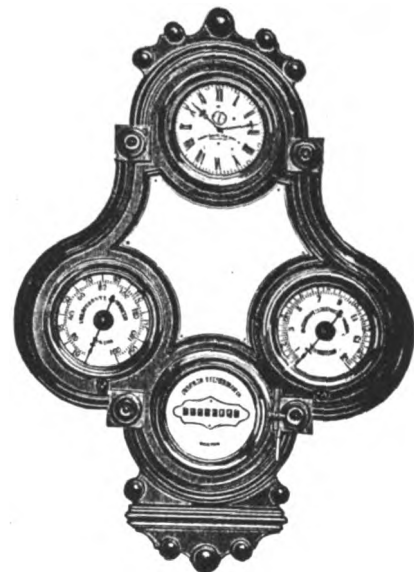


Fig. 26.

For Testing Boilers, Pipes, etc., by Hydrostatic Pressure. Pump, with 1 1/4-inch Suction (not including gauge), \$50.00.

## PEERLESS PRESSURE RECORDING GAUGE.

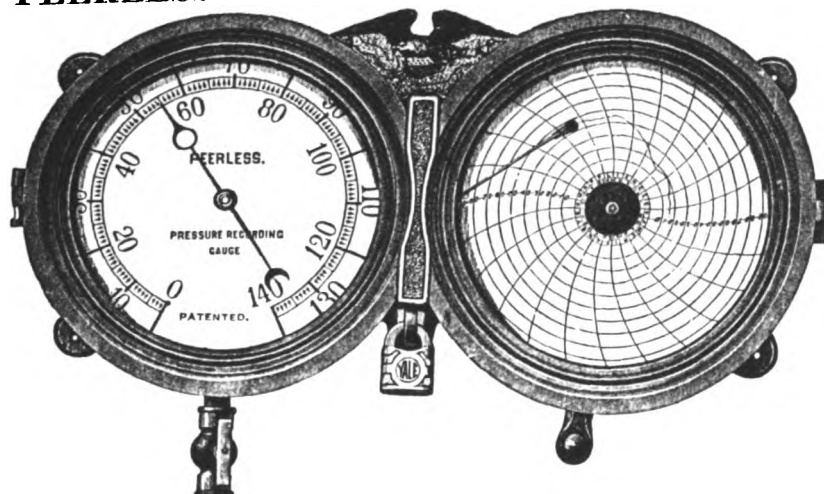


Fig. 28.

This is the cheapest, simplest, and most reliable device for recording the pressure of steam. It makes a perfect chart, showing the extent, duration, and time of every variation in pressure. Each instrument is mounted on a black walnut board.

Price, including one year's supply of dials ..... \$75.00

## PUMP AND TEST GAUGE.

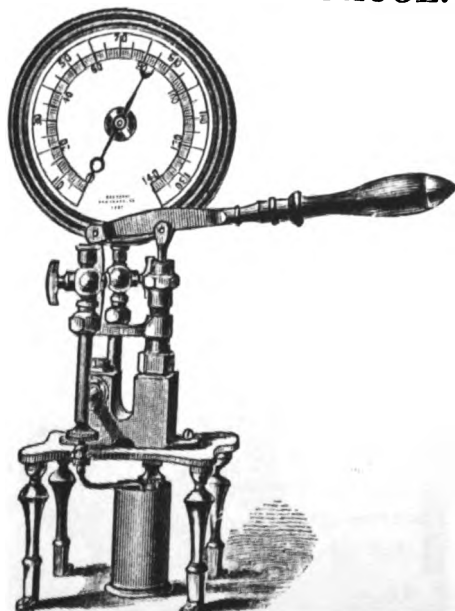


Fig. 30.

## PUMP AND TEST GAUGE.

Fig. 30.

This Pump is very neat and portable, occupying a space 9 inches square, and fitted in a black walnut velvet-lined box, having lock, key, and handles.

### Prices.

Pump and Gauge complete, nickel plated, including walnut box, etc.	\$75.00
Pump only, nickel plated	50.00
" " brass	40.00
Gauge only, nickel plated	25.00
" " brass	22.50

## GAUGE TESTING APPARATUS.

Fig. 31.

The device illustrated in the accompanying cut, Fig. 31, shows a gauge tested by actual weights, exerting pressures on known areas, and is the only infallible standard for the measurement of pressures.

Price.....\$50.00

## PUMP AND TEST GAUGE.

### Prices Pump and Test Gauge.

Fig. 29.

Pump Complete with Gauge.	
Gauge, 3 1/2-inch dial, nickel plated	\$30.00
Gauge, 3 1/2-inch dial, brass	28.00

### PUMP ONLY.

Nickel plated	14.00
Brass	12.00

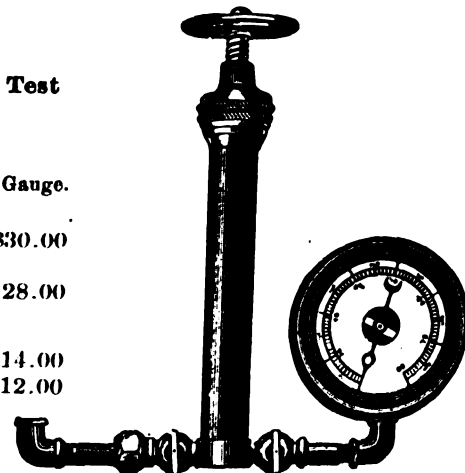


Fig. 29.

This Pump is very convenient for persons having but few gauges to test, as it occupies but little space, and the price is low. It is especially adapted for boiler inspectors.

## GAUGE TESTING APPARATUS.

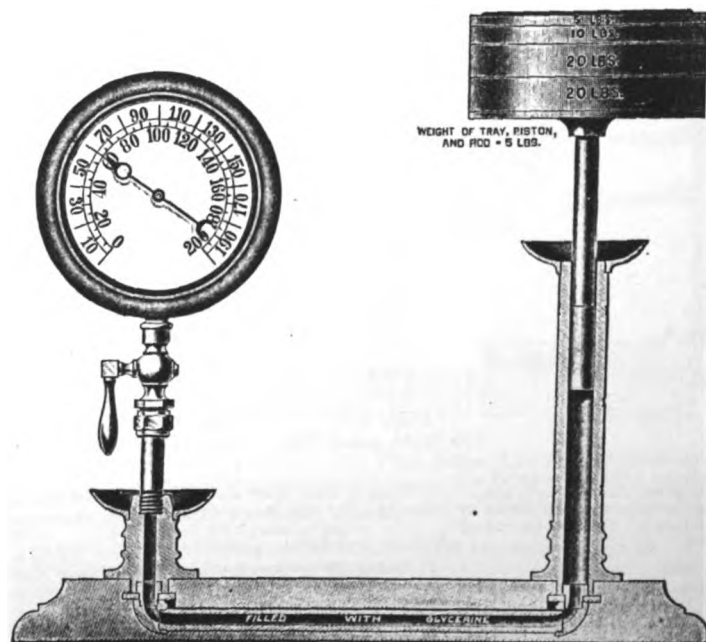


Fig. 31.



## THALPOTASIMETERS.

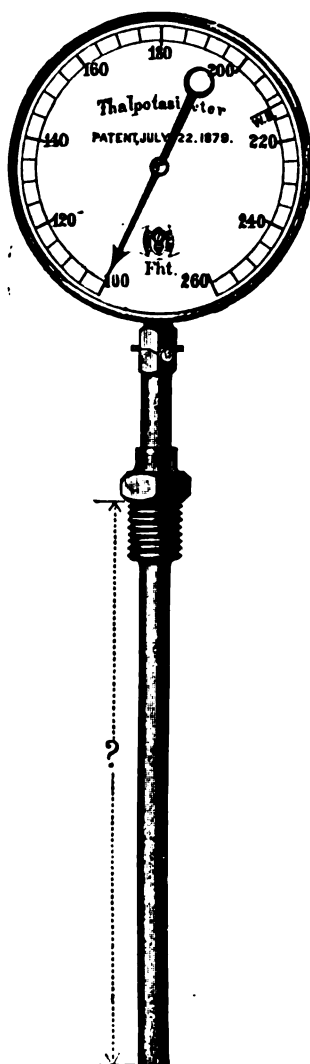


Fig. 32.

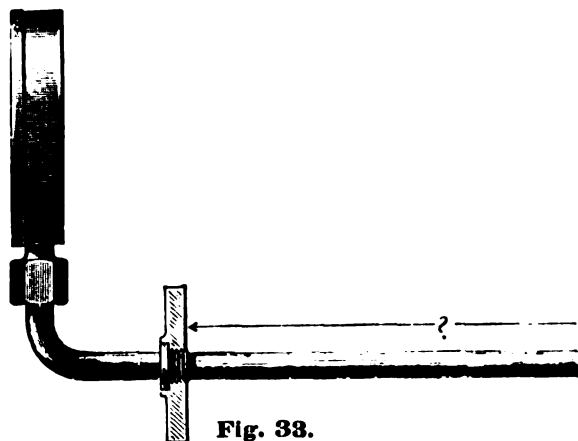


Fig. 33.

The Mercury Thermometers now commonly used are, on account of their fragility, not suitable for many purposes.

The Thalpotasimeter has been designed to overcome this and other objectionable features of Glass Thermometers, and is in principle based upon measuring the expansion which saturated steam of a liquid indicates for temperatures to be measured, and consists of a strong tube or vessel partly filled with ether, in connection with a Manometer to which a temperature scale is attached.

The tubes used for these instruments are made of brass, and tested to three times the intended pressure resp. temperature, but should, nevertheless, not be used for any higher temperature than indicated on the dial.

The advantages of the Thalpotasimeter over all other instruments made for the same purposes are:

- 1.—Perfect reliability in indicating temperature.
- 2.—Great durability.
- 3.—Facility of shaping the tubes to suit requirements.

The relative proportion of expansion and temperature have been ascertained by actual experiments.

Fig. 32 or 33.—7-inch dial, indicating from 100 to 250° Fahr., suitable for Vacuum Pans, Diffusion Apparatus, Evaporators, Heating Pipes, etc., stem not exceeding 4 feet .....\$30.00

Maximum Pointer.....extra, 3.00

Maximum and Minimum Pointer..... 5.00

Thalpotasimeter, with Electric Alarm Attachment, including Electric Battery and Alarm Bell..... 50.00

Suitable flanges or screw connections for mounting these instruments are made to order at moderate prices.

In ordering, state the purpose for which the instrument is to be used, length and form of tube, and temperature.

## PYROMETERS.

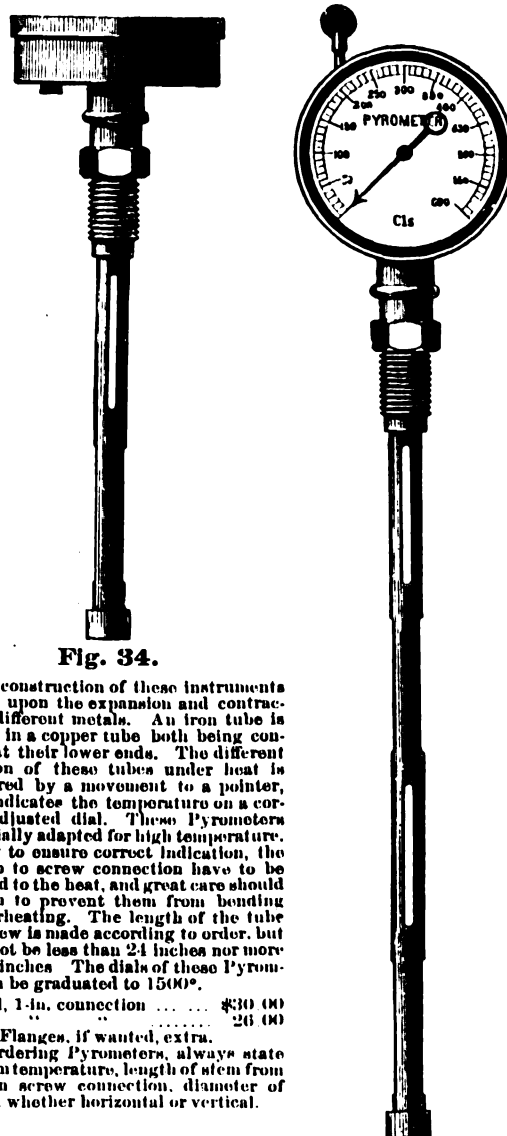


Fig. 34.

The construction of these instruments is based upon the expansion and contraction of different metals. An iron tube is enclosed in a copper tube both being connected at their lower ends. The different expansion of these tubes under heat is transferred by a movement to a pointer, which indicates the temperature on a correctly adjusted dial. These Pyrometers are specially adapted for high temperature. In order to ensure correct indication, the tubes up to screw connection have to be subjected to the heat, and great care should be taken to prevent them from bending and overheating. The length of the tube from screw is made according to order, but should not be less than 24 inches nor more than 72 inches. The dials of these Pyrometers can be graduated to 1500°.

7-in dial, 1-in. connection .....\$30.00

5 " " " " ..... 20.00

Flanges, if wanted, extra.

In ordering Pyrometers, always state maximum temperature, length of stem from flange on screw connection, diameter of dial, and whether horizontal or vertical.

Fig. 35.

## THERMOMETERS AND HYDROMETERS.

Angle Thermometer.

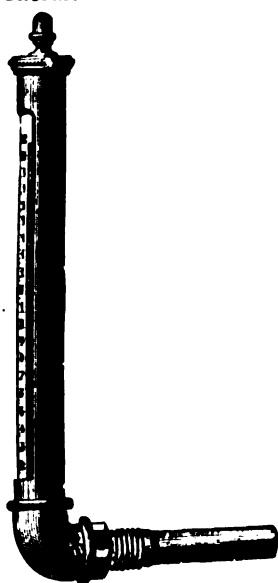


Fig. 36.

Suitable for steam, water, air, brine, ammonia, etc. For temperatures not exceeding 600° Fahrenheit. Connection, 3/4-inch pipe thread; length of scale, 8 inches. Stem not exceeding 6 inches.

Brass case, with sliding cov'r, \$12.00  
" " without " 10.00  
Iron case, " " 10.00  
Reserve thermometer tubes.... 6.00

Hot Well Thermometer.



Fig. 37.

With Shield, each \$25.00.

Salinometer Thermometer.



Fig. 38.

Each, \$1.25.

Salinometer Hydrometers, COPPER.



Fig. 39.

Each, \$6.00.

GLASS.



Fig. 40.

Each, \$1.00.

Uptake Thermometer.

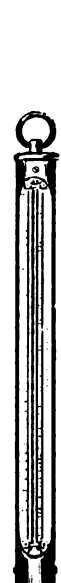


Fig. 41.

Each, \$7.50.

High Grade Thermometer.



Fig. 42.

50° to 300° & upward \$5.00 to \$15.00 each.

Long's Salinometer Pot.

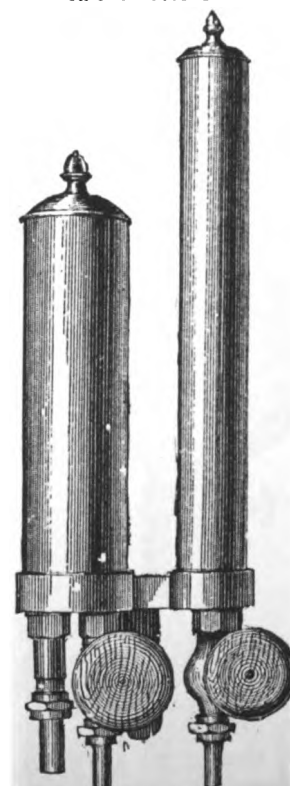


Fig. 43.

Price, including 1 Thermometer and 1 Glass Hydrometer, \$40.00

Copper Case Thermometers.—10-inch, \$20.00 per dozen. 12-inch, \$24.00 per dozen.

Common Japanned Tinned Case Thermometers.—

Sizes, inches..... 7 8 10 12

Per dozen .....\$5.00 5.50 6.50 8.00

Fancy Thermometers, on Black Walnut Bases.—

Cabinet, Flat B. W. Base. Sizes, inches..... 8 10

Per dozen .....\$6.50 8.50

Window, Angular B. W. Base.....Size, 8 inches. Per dozen, \$5.50

Combined Thermometer and Barometer.—

Storm Glass and Thermometer, 9 1/2 inches..... Per dozen, \$8.50

THORNTON N. MOTLEY, NEW YORK.

# ENGINE INDICATORS. Tabor Improved.

7

CROSBY IMPROVED.

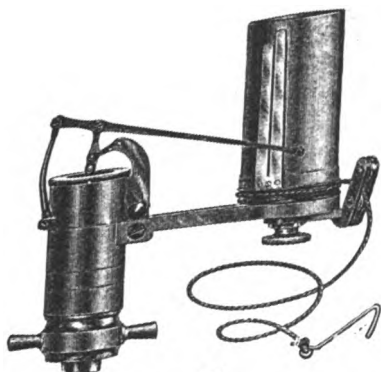


Fig. 44.

Crosby Nickel-Plated Indicator, complete with one Spring and Scale, two Cocks, Wrenches, Screw Driver, 100 sheets Metallic Paper, bottle of Watch Oil, hank of Indicator Cord and Book of Instructions, the whole mounted in a velvet-lined mahogany box.....	each \$85.00
Extra Springs to any Scale.....	5.00
" Cocks or Elbows.....	3.00
" Three-way Cocks.....	7.00
" Boxw'd Scales, one graduation.....	.50
" Steel Scales, seven graduations.....	1.25
Clamps.....	3.00
Single Carrying Pulley.....	.50
Double.....	1.00
Pantograph.....	10.00
Drum Spring Testing Apparatus.....	40.00
Locomotive Counter.....	25.00

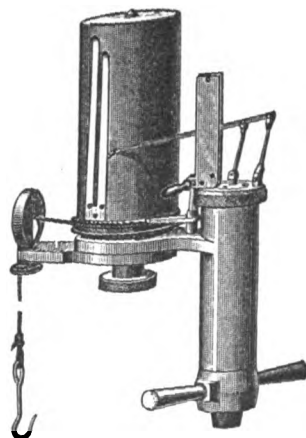


Fig. 45.

Tabor Indicator complete (full nickel-plated), with one Spring, one Boxwood Scale, two Cocks, Wrenches for the Indicator, Jewelers' Screw Driver, bottle of Watch Oil, one extra Drum Spring and Cord, box of Lead Pencils, all inclosed in a neat black walnut case.....	each \$85.00
Extra Patent Duplex Springs.....	5.50
" Boxwood Scales.....	.50
" Steels.....	1.25
" Cocks.....	2.75
" Elbows.....	2.50
" Three-way Cocks.....	5.50

THOMPSON IMPROVED.

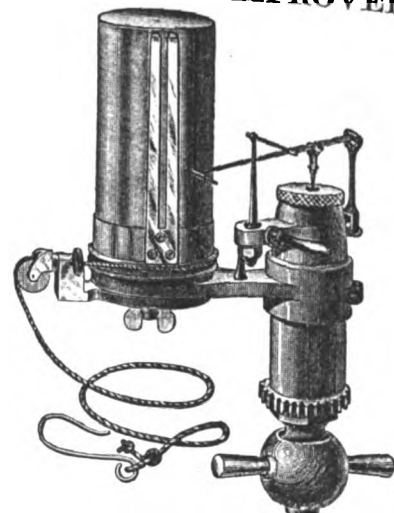


Fig. 46.

Thompson Indicator complete, with one Spring, in the instrument, one Scale, two Cocks, all necessary Wrenches to use on the instrument, one Screw Driver, one bottle Watch Oil, and Pray's "Twenty Years with the Indicator," all enclosed in a neat black walnut box,.....	Each \$85.00
Thompson Indicator, with the above fixtures, and nickel-plated.....	each \$88.00
Extra Piston, 1/4-inch area.....	10.00
" Springs.....	5.50
" Boxwood Scales.....	.50
" Steel Scales.....	1.50
" Cocks.....	2.75
" Elbows.....	2.50
Three-way Cocks.....	6.00

## WATCHMAN'S TIME DETECTORS,

For Towns, Villages or Mansions; Railroads, Prisons or Asylums; Coal, Copper, Gold and Silver or other Mines; Foundries, Factories or Public Works.

IMHAUSER'S.

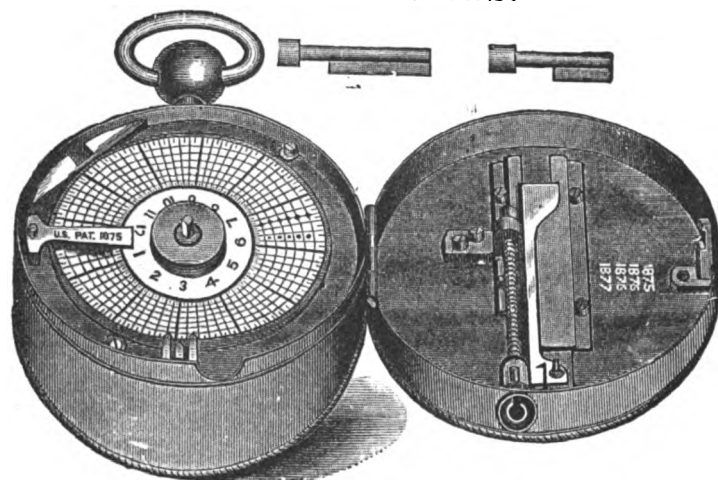


Fig. 47.

This Watch is supplied with twelve keys for twelve different stations in or outside of the buildings. Nos. 1 to 6 mark between the circles 1, 2, 3, 4, 5, 6, on a paper disc, which is slowly revolving; the remaining six keys, Nos. 7 to 12, make a figure on the line of the circle so that one does not conflict with the other.

This Watch is also supplied with a safety lock attachment, which prevents dishonest watchmen from opening the Watch with false keys and marking the dials without making their rounds. It is provided with an additional stationary marker (little knife in the cover), which marks the dial in the outside circle, showing at once any attempt of the watchman to open the Watch.

The marking apparatus is the cover of the case; the watch movement is separate, and therefore safe from dust entering the key-hole.

Price, with pouch, box of dials and twelve different keys, complete.....\$75.00

BURK'S.

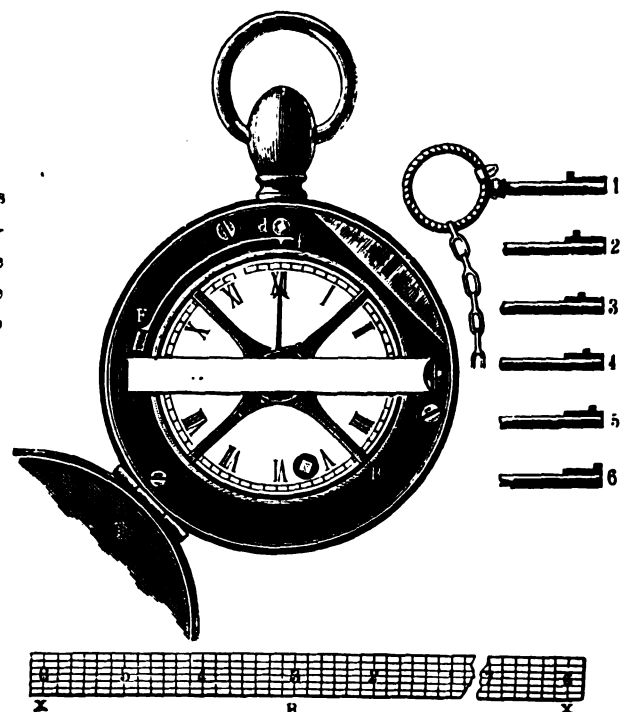


Fig. 48.

This Watch is secured in a brass case of three inches diameter. It is of excellent quality, adapted for the purpose, and warranted in every respect. Price, including six keys, a book for two years, a box of slips for one year.....\$40.00  
Extra Keys, with chain..... 1.00  
Box of Slips, containing 400..... 1.00  
Record Book..... 1.00  
Leather Pouch..... 3.00

## COMMON GONG.

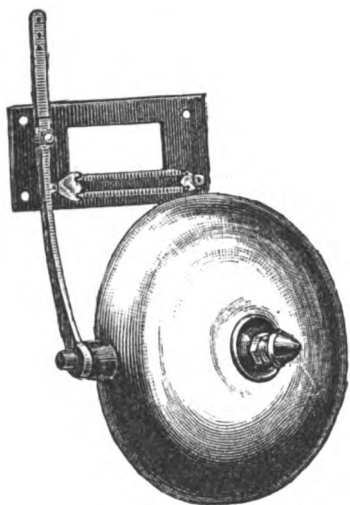


Fig. 49.

## TRIP GONG.

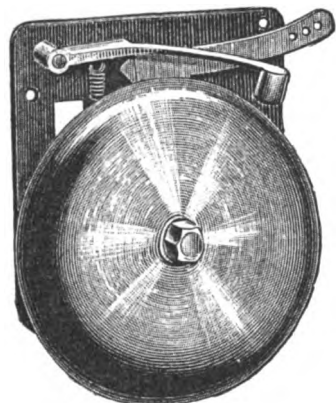


Fig. 53.

## GONG PULL.

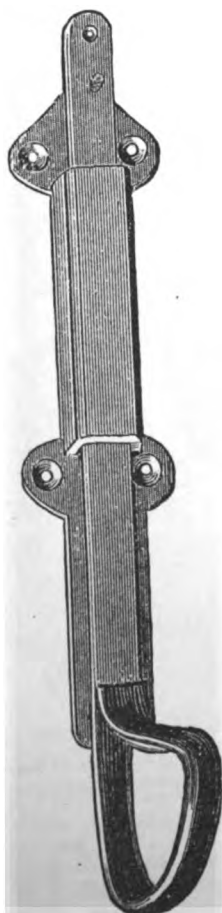


Fig. 50.

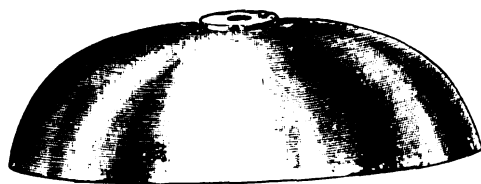
GONG BELL.  
Not Mounted.

Fig. 50.

These Gong Caps are made for Electrical and other purposes.  
Diameter, 2, 2½, 3, 3½, 4, 5, 6, 7, 8, 10, 12, 14, 15, 16, 18, 20 ins.  
Polished ..... per lb. \$0.50 | Nickel-Plated ..... per lb. ...

## CAR GONG.

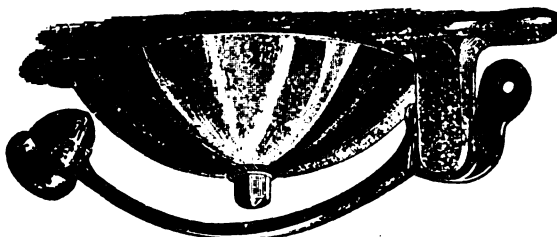


Fig. 52.

5 inches, Brass Base, each \$3.50 | 5 inches, Iron Base, each \$2.50

## Prices Gongs.

Figs. 49, 51, 53 and 51.

Sizes, inches	3	4	5	6	7	8
Fig. 49.....each	\$1.00	1.25	1.50	2.25	3.25	4.00
" 51....."						6.00
" 53....."	1.20	1.30	1.75	2.50	3.50	4.50
" 54....."				2.50	3.50	4.50
Sizes, inches	9	10	13	15	18	25
Fig. 49.....each	\$5.00	6.00	15.00	20.00	27.00	to order.
" 51....."	7.00	9.00	21.00	26.00	34.00	
" 53....."	5.50	6.50	16.00	22.00	27.00	to order.
" 54....."	5.50	6.50				

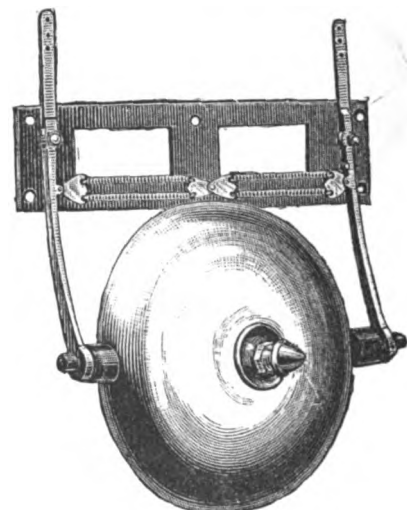
LOCOMOTIVE GONG.  
Double Hammer.

Fig. 51.

## LOCOMOTIVE GONG.

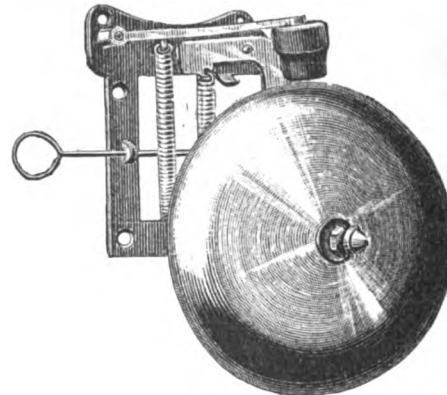


Fig. 54.

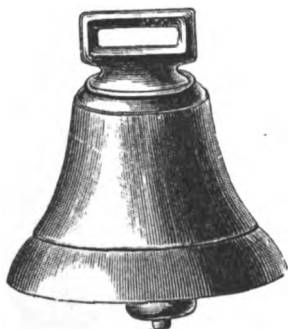
CAR BELL  
With Loop.

Fig. 55.

**Prices Car Bells.**  
MALLEABLE IRON LOOPS.  
Diam. mouth, 2¾, 3½ ins.  
Pure Bell Metal, per lb. \$0.52  
Common " per lb. .39  
CAR BELLS, SOLID LOOP.  
Pure Bell Metal, Rough.  
Diam. mouth, 3, 3½ ins.  
Per lb. \$0.52

## Prices Gong Pulls.

Nos. 1 2 3 4  
Ea. \$0.60 1.00 1.75 2.25

## JINGLE BELL.

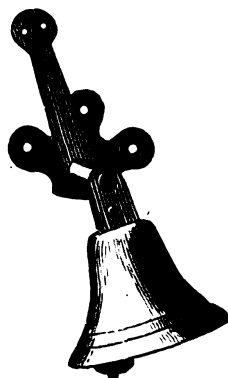


Fig. 56.

## Prices Jingle Bells.

Sizes, ins. 3 3½ 4  
Each... \$2.25 2.50 2.75  
Sizes, ins. 4½ 5 6  
Each... \$3.25 4.50 5.50

## Prices Bell Cranks.

Nos. 1 2 3 4  
Each \$0.20 .30 .55 .75

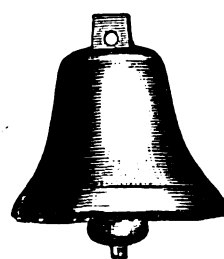
CAR BELL,  
COMMON.

Fig. 57.

**Prices Car Bells.**  
Pure Bell Metal, Rough.  
Diam. mouth, 3, 3½ ins.  
Per lb. \$0.52

**COMMON BELL METAL.**  
Diam. mouth 2¼, 2½, 2¾,  
3, 3½, 3¾, 4 ins.  
Rough ..... per lb. \$0.35  
Tumbled " .35  
Finer Polished " .39  
White Finish " .41

## Prices Bell Cranks.

Nos. 1 2 3 4  
Each \$0.20 .30 .55 .75

## SIDE BELL CRANK.

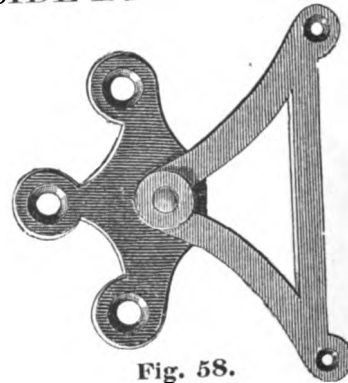


Fig. 58.

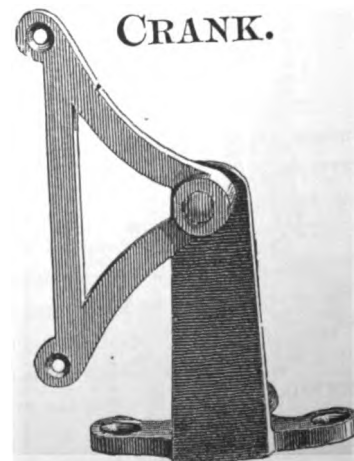
END BELL  
CRANK.

Fig. 61.

## CHECK SPRING.



Fig. 60.

Bright Spring Wire, 5 ins. long, per gro. \$6.75 | Brass Spring Wire, 5 ins. long, per gro. \$15.00.

THORNTON N. MOTLEY, NEW YORK.

## CHURCH, FIRE, ACADEMY, AND FACTORY BELLS.

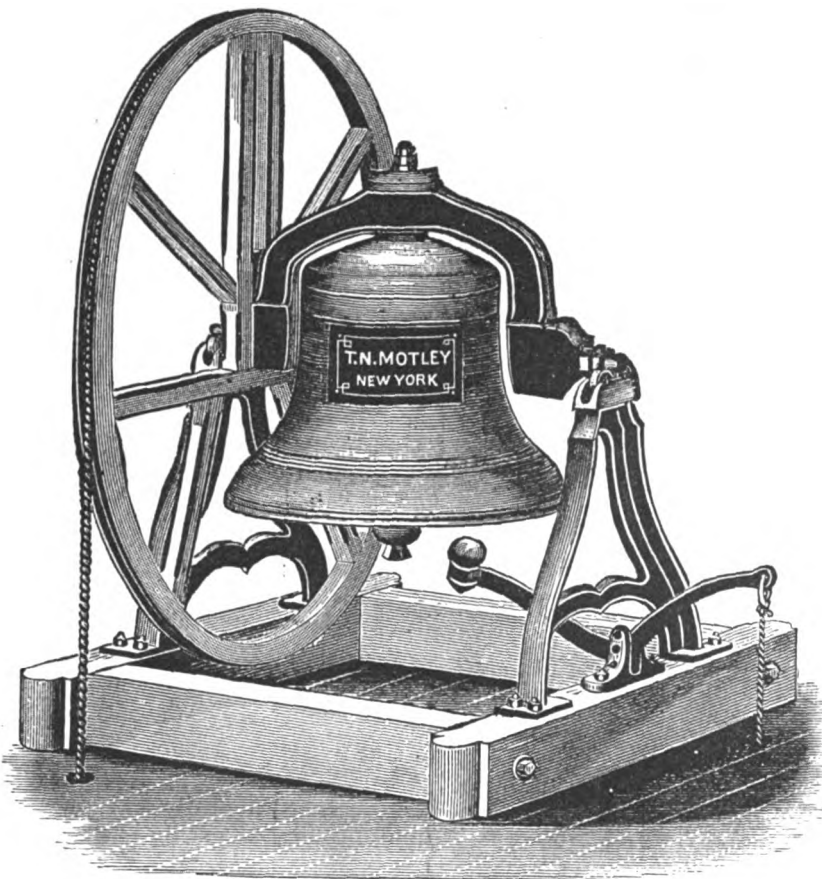


Fig. 62.

### Prices of Mountings for Bell Metal Bells.

CHURCH AND FIRE MOUNTINGS.					
Weight of Bell.	Prices Mountings.	Weight of Bell.	Prices Mountings.	Weight of Bell.	Prices Mountings.
400 lbs.	\$30.00	1,000 lbs.	\$45.00	2,100 lbs.	\$90.00
450 "	30.00	1,100 "	45.00	2,300 "	115.00
500 "	35.00	1,200 "	55.00	2,500 "	115.00
550 "	35.00	1,300 "	55.00	2,800 "	130.00
600 "	35.00	1,400 "	70.00	3,000 "	130.00
650 "	35.00	1,500 "	70.00	3,500 "	140.00
700 "	40.00	1,600 "	70.00	4,000 "	140.00
750 "	40.00	1,700 "	90.00	4,500 "	140.00
800 "	40.00	1,800 "	90.00	5,000 "	165.00
900 "	45.00	2,000 "	90.00	6,000 "	190.00

CHAPEL, ACADEMY, AND FACTORY MOUNTINGS.					
100 lbs.	\$13.00	175 lbs.	\$20.00	250 lbs.	\$23.00
125 "	13.00	200 "	20.00	300 "	25.00
150 "	15.00	225 "	20.00	350 "	27.00

STEAMBOAT AND SHIP MOUNTINGS.					
100 lbs.	\$12.00	250 lbs.	\$20.00	450 lbs.	\$25.00
150 "	12.00	300 "	20.00	500 "	30.00
175 "	17.00	350 "	20.00	600 "	30.00
200 "	17.00	400 "	25.00	700 "	30.00

PLANTATION AND FARM MOUNTINGS.					
15 lbs.	\$2.50	30 lbs.	\$3.00	60 lbs.	\$4.00
20 "	2.50	40 "	3.50	70 "	4.00
25 "	3.00	50 "	3.50	80 "	4.50

### Prices Bell Metal Bells.

All sizes..... per lb. cents.  
Prices of Bells vary according to price of metals of which they are composed.

## LOCOMOTIVE BELLS.

Sizes ranging from 60 lbs. to 125 lbs., made with shank of any given size, and furnished plain or polished..... per lb. cents.

### BELL METAL BELLS. For Ships and Steamboats.



Fig. 63.

Price.....per lb. cents.

### STEEL AMALGAM BELLS. For Churches, Factories, Engine Houses, Etc.



Fig. 64.

### Prices Complete with Hangings.

FOR SCHOOL-HOUSES, ACADEMIES, FACTORIES, ETC.

Diameter of Bell.	Weight with Wheel Hangings and Frame Complete.	Price Each.
No. 6. 25 inches	230 lbs.	\$25.00
No. 6½. 27 "	340 "	36.00
Tolling Attachment or Fire Alarm for Nos. 6 and 6½, extra		4.00

FOR CHURCHES, FACTORIES, ENGINE HOUSES, ETC.

No.	Diameter of Bell.	Weight of Bell.	Weight of Bell and Hangings.	Price Each.
7	30 in.	260 lbs.	490 lbs.	\$50.00
8	34 "	418 "	730 "	75.00
9	38 "	528 "	925 "	130.00
10	42 "	980 "	1,276 "	175.00
Tolling Attachment or Fire Alarm, extra				6.00

### STEEL AMALGAM BELLS. For Schools, Farms, and Factories.

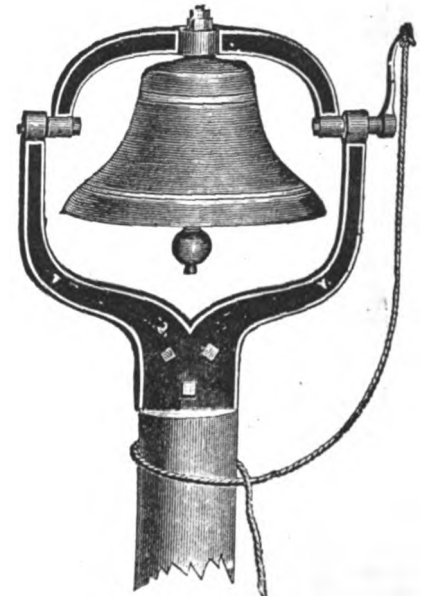


Fig. 65.

### Prices Complete.

No.	Diam.	Weight.	Price.
No. 1-0, 13 in.	44 lbs.	\$4.75	
No. 2-0, 15 "	52 "	6.50	
No. 3-0, 15½ "	63 "	7.50	
No. 4-0, 16½ "	79 "	9.75	
No. 5-0, 17 "	89 "	11.00	
No. 6-0, 19½ "	125 "	15.00	
No. 7-0, 21½ "	181 "	20.00	

My Steel Amalgam Bells are fitted with strong and handsome rotary mountings, and are all richly bronzed. They are in extensive use in various parts of the United States and foreign countries, giving in all cases and localities excellent satisfaction from their valuable qualities; combining depth and clearness of tone with strength and durability.

## STEAM WHISTLES.

Steam Metal.



Fig. 66.

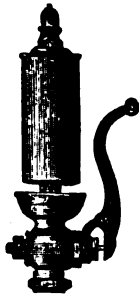


Fig. 67.



Fig. 68.



Fig. 69.



Fig. 70.



Fig. 71.

## STEAM WHISTLES.

Diameter of Bells .....	Inches	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12
Sizes for Iron Pipe .....	"	3/8	1/2	1/2	3/4	3/4	1	1	1 1/4	1 1/2	2	2 1/2	3	3
Plain Whistle, fig. 66 .....	Each	\$1.70	2.00	2.50	3.25	4.50	6.00	8.50	11.00	18.00	24.00	65.00	125.00	250.00
Whistle, with Valve, fig. 67. "	"	3.50	3.75	4.00	4.75	6.50	8.00	11.00	14.00	22.00	30.00	80.00	175.00	350.00

## STEAM CHIME WHISTLES.

Fig. 68.—Diameter of bell 2 1/4 ins., size for iron pipe 1 in. .... each \$15.00  
 " 69.— " " 2 1/4 " " " 1 "..... " 20.00

Fig. 70.—Diameter of bell 2 1/4 ins., size for iron pipe 1 1/2 ins. .... each \$25.00  
 " 71.—To order. Prices according to size of Whistles.

## PATENT STEAM GONGS.



Fig. 72.

12-inch, 3 bells.



Fig. 73.

12-inch.



Fig. 74.

8-inch.



Fig. 75.

6-inch.

## PATENT SINGLE BELL CHIME STEAM WHISTLES.



Fig. 76.

Without Valve.

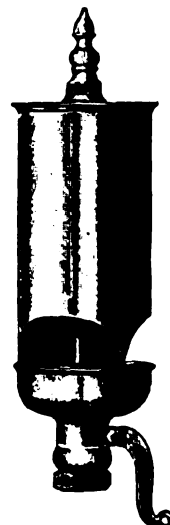


Fig. 77.

With Upright Valve.

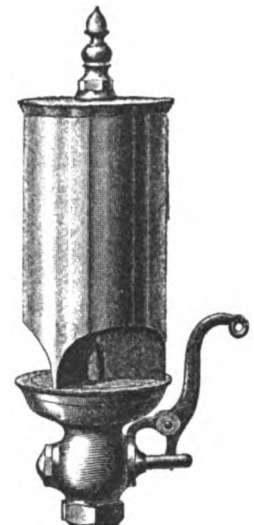


Fig. 78.

With Side Valve.

Fitt's Patent Steam Gong is used for fire alarm and fog signals, and as a call in the manufactory; six sizes are manufactured.

Its construction is novel and peculiar, entirely unlike the ordinary steam whistle. It has two bells instead of one, as in the steam whistle. These bells are so adjusted and tuned as to produce a musical fifth chord, or, with the addition of a third bell, a fifth and eighth. This entirely obviates the harsh sound of the whistle, and by following the law of atmospheric harmonic vibration, while their tones are soft and pleasant near by, their power of sound is immensely increased. The different sizes are toned to different notes of the musical scale, and by various combinations may be varied in pitch to a limited extent. They have been heard thirty miles, thus showing their vast powers of sound. It can be applied to any common boiler, as the quantity of steam required to sound it is trifling.

## Prices, including Valve.

Diameter bell 6 ins. ....	1 1/2-inch supply pipe, each	\$60.00
" 8 " .....	" " " " " " " "	75.00
" 10 " .....	" " " " " " " "	100.00
" 12 " .....	" " " " " " " "	115.00
" 12 " 3 tones harmonized. ....	" " " " " " " "	150.00

The peculiar merit of this Whistle consists in producing three distinct tones, pitched to the first, third and fifth of the common musical scale, which harmonize and give an agreeable musical chord.

It is more penetrating than the common whistle, and can be heard at a greater distance. It effectually destroys the harsh, disagreeable noise, which has been a source of common complaint in other whistles and gongs.

## Prices.

DESCRIPTION.	Fig. 76. Each.	Fig. 77. Each.	Fig. 78. Each.
Diam. bell 2 ins., size of steam pipe 1/2 in. ....	\$5.00	\$6.50	\$7.00
" 3 " " " " 3/4 " ..	8.00	9.50	11.00
" 4 " " " " 1 " ..	14.00	16.00	18.00
" 5 " " " " 1 1/4 " ..	22.00	25.00	28.00
" 6 " " " " 1 1/2 " ..	30.00	35.00	38.00
" 8 " " " " 2 " ..	70.00	85.00	90.00
" 10 " " " " 2 1/2 " ..	110.00	130.00	140.00
" 12 " " " " 3 " ..	150.00	180.00	200.00



THORNTON N. MOTLEY, NEW YORK.

## SAFETY COMBINATION COLUMN.

With  
Ashcroft  
Low-Water  
Detector.

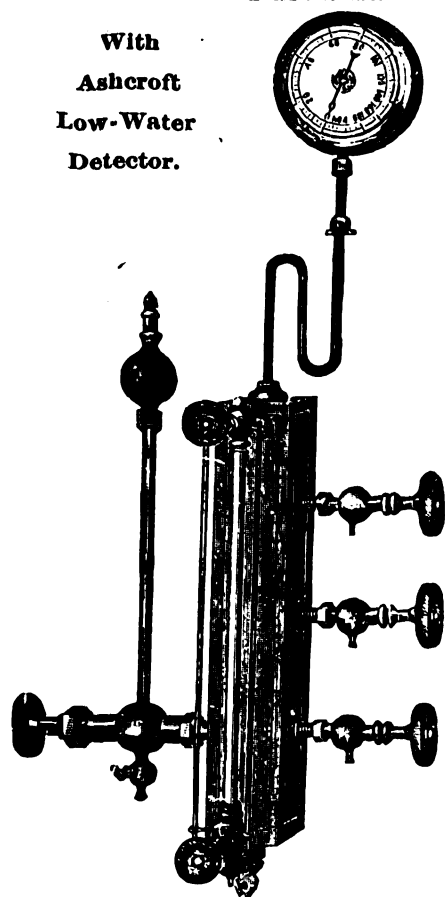


Fig. 79.

Prices, Fusible Plugs.

With thread $\frac{1}{2}$ inch.....	each, \$0.35
" " $\frac{3}{4}$ ".....	" 0.50
" " 1 ".....	" 0.75

Fig. 82.

- Prices,  
Fig. 79.
- COMBINATION NO. 1.  
With one No. 7 Gauge, three  $\frac{3}{8}$  in. Gauge Cocks, common wood handles. One Water Gauge Combination Round body, no Low-water Detector ..... \$20.00
- COMBINATION NO. 2.  
With one No. 6 Steam Gauge, three  $\frac{1}{2}$  in. Gauge Cocks, common wood handles. One Water Gauge, Combination Square body, no Low-water Detector ..... 25.00
- COMBINATION NO. 3.  
With one No. 4 Steam Gauge, three  $\frac{1}{2}$  in. Gauge Cocks, patent wood handles. One Water Gauge, Combination Octagon body, one Low-water Detector ..... 50.00
- Low-Water Detector extra for No. 1 or No. 2 Combination ..... 25.00
- Ashcroft Low Water Detectors with Fusible Plug.
- Old Style for Large Stationary Boilers.
- No. 1, with 6 Discs ..... each \$30.00  
Extra Discs ..... per dozen 6.00
- New Style shown left side cut Fig. 79.
- No. 2.—All Brass, with 6 Discs ..... each \$30.00  
No. 3.—Iron Pipe and Ball, Brass Cocks, with 6 Discs ..... each 25.00  
Extra Discs ..... per dozen 1.20

### FUSIBLE PLUG. For Crown Sheets of Boilers.

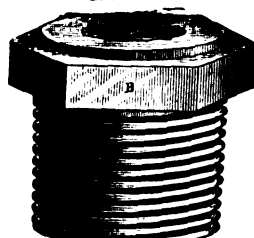


Fig. 82.

## GAUGE COLUMN.

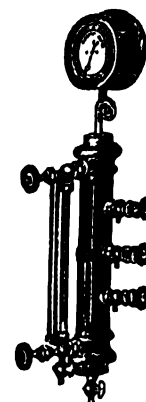


Fig. 80.

- No. 1.—12 inch centers. Boiler connections,  $\frac{1}{2}$  inch.  
Price, complete, each, \$15.00
- No. 2.—16 inch centers. Boiler connections,  $\frac{3}{4}$  inch.  
Price, complete, each, \$20.00
- No. 3.—19 inch centers. Boiler connections, 1 inch.  
Price, complete, each, \$25.00

### Description Low Water Alarm.

Fig. 81.

The Fusible Plug is placed just below the cock, while the lower end of tube reaches to the low-water line in the boiler. As long as the lower end of tube remains under water the apparatus will be filled with water, but as soon as the water falls below the end of the tube, steam will enter, melt the Fusible Plug, and blow the whistle, giving the alarm.



Fig. 81.

Price,  
Fig. 81.

Alarm complete.....	each, \$18.00
Extra Plugs.....	" .50

## RELIANCE ALARM GAUGES AND WATER COLUMNS.

These Gauges and Water Columns are so constructed that should the pump give out, injector get out of order, water supply be shut off, or the water in the boiler from negligence or any other cause, get down to the lower or up to the upper gauge cock, an alarm will be sounded.

The Floats used in these Gauges are solderless. The parts are united by special machinery, and are as close jointed as if one piece and jointless. These Floats will stand with perfect ease two hundred pounds pressure, and can be made to stand twice as much.

### LOW WATER ALARM.

### WATER COLUMN COMPLETE.

### HIGH AND LOW ALARM.

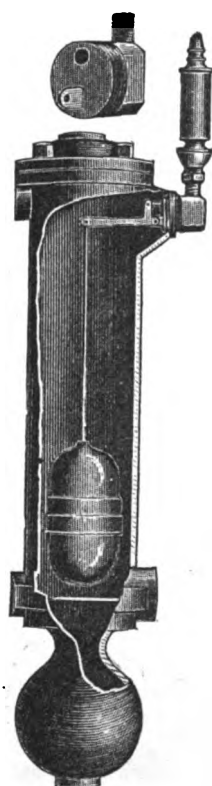


Fig. 83.

### Description Low-Water Alarm.

The cut, Fig. 83, shows the mechanism of the Low-water Alarm. A bell-crank lever connects the upright float rod with the whistle valve, and, when in use, with the water at the proper height, the solderless Copper Float attached to the lower end of the vertical rod is submerged, and, pressing upward, holds the valve closed; but when the water, from any cause whatever, such as leakage, stopping of injector, breaking of pumps, or carelessness, gets low enough to rob the float of its support, it sinks of its own gravity, thus opening the valve and blowing the whistle.

### Description High and Low Water Alarm.

Fig. 85.

There is no change in the principle or complication of the Low-water Alarm in the combined High and Low Water Alarm, the only change being in bending rod so as to pass around the Upper Float, and the High-water Alarm is simply the Low-water Alarm reversed. The bell-crank lever is turned over so that the weight of the float holds the valve closed until the water rises and carries the float with it, thus opening the whistle valve.

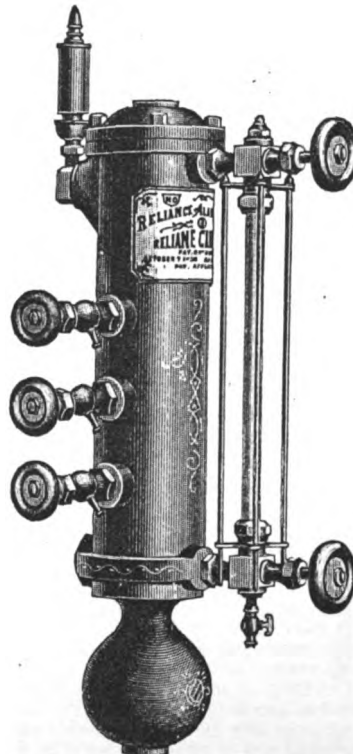


Fig. 84.

### Weight, Size of Connections, etc.

Figs. 83, 84, and 85.

Numbers.	Weight Untrimmed pounds.	Size of Boiler, H.P.	Steam Connection.	Water Connection.	Distance bet. G. Cocks.	Dimensions of Water Gauge.	Size of Gauge Cocks.
1	23	to 80	$\frac{3}{4}$	1	3	$5\frac{1}{2} \times 14$	$\frac{1}{2}$
2	22	to 80	$\frac{3}{4}$	1	3	$5\frac{1}{2} \times 14$	$\frac{1}{2}$
3	17	to 30	$\frac{3}{4}$	1	3	$5\frac{1}{2} \times 14$	$\frac{1}{2}$
4	15	to 20	$\frac{3}{4}$	1	3	$5\frac{1}{2} \times 11$	$\frac{1}{2}$
5	37	80 to..	1 $\frac{1}{4}$	1 $\frac{1}{4}$	4	$4 \times 18$	$\frac{3}{4}$
6	33	80 to..	1 $\frac{1}{4}$	1 $\frac{1}{4}$	4	$4 \times 16$	$\frac{3}{4}$

### Prices and Dimensions.

Figs. 83, 84, and 85.

Numbers.	Kind of Alarm.	Dimensions over all, in inches.	Variation of water between Alarms.	JAPANNED.	
				Without G. Cocks or W. Gauge.	With G. Cocks and W. Gauge.
1	H&L	$3\frac{1}{4} \times 23$	6	\$28.00	\$35.00
2	Low	$3\frac{1}{4} \times 23$	..	25.00	32.00
3	H&L	$3 \times 21$	6	*22.50	30.00
4	Low	$3 \times 20$	..	20.00	27.00
5	H&L	$4\frac{1}{2} \times 20\frac{1}{2}$	8	30.00	40.00
6	Low	$4\frac{1}{2} \times 27$	..	28.00	37.00

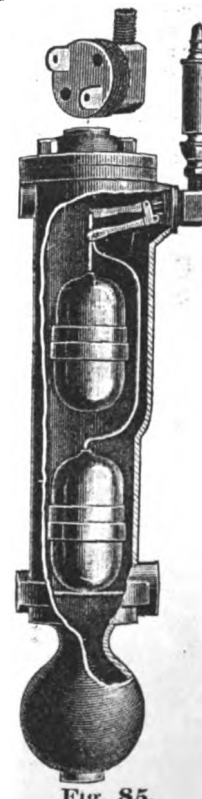


Fig. 85.

When not otherwise stipulated, I ship the columns trimmed, with gauge cocks and water gauge complete ready for attaching. The trimmings are all of finished brass of substantial make. No cheap trimmings are used.  
\* This gauge is intended for small boilers carrying 30 lbs. pressure or less.  
Special trimmings of any desired pattern will be furnished at reasonable prices.



THORNTON N. MOTLEY, NEW YORK.

## KELLAM'S AUTOMATIC PRESSURE REGULATOR.

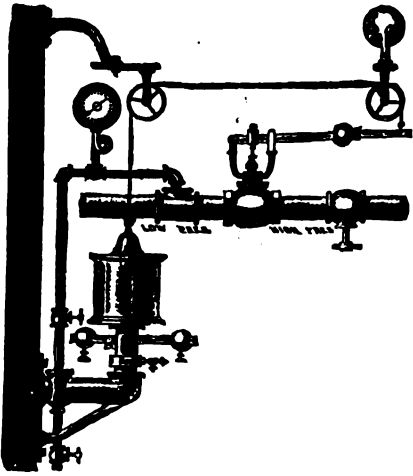


Fig. 93.

### Prices.

For Valves.....Ins.	1,	1 $\frac{1}{4}$ ,	1 $\frac{1}{2}$ .
Each.....	\$85.00	87.00	95.00
For Valves .... Ins.	2,	2 $\frac{1}{2}$ ,	3,
Each.....	\$110.00	120.00	130.00

## KELLAM'S AUTOMATIC REGULATOR.

FOR REDUCING STEAM PRESSURE.

Fig. 93.

All buildings running an elevator and heating apparatus from the same boilers should use this Regulator. When a few pounds of steam only are required for heating purposes, the Regulator can be set at low pressure and boilers carry steam sufficient to run the elevator or other machinery. It is of great advantage at night, when only a little steam is required to keep the pipes warm, as it can be set by the engineer when leaving the building, and need not be interfered with by the watchman during the night; it will regulate itself, and by thus keeping a low current through the pipes will save them from bursting and avoid the snapping incident to the methods of regulating now commonly in use. And in many cases the expense of running an extra boiler for heating purposes can be saved, as one boiler (having sufficient capacity) can by this Regulator be made to give high pressure for motive power and low pressure for STEAM HEATING.

This Regulator is invaluable for Steam Heating, and in manufactories using steam in treatment of goods, such as Paper Mills, Rubber Works, Canning Factories, Sugar Houses, Breweries, Cloth Printing, etc.

## LOW PRESSURE DAMPER REGULATOR.

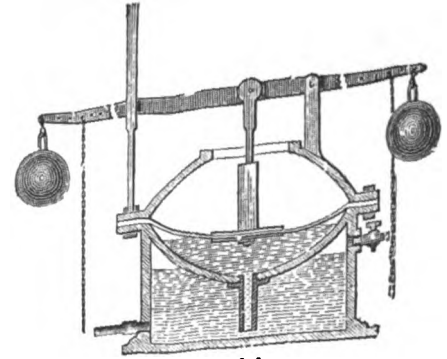


Fig. 94.

### Description Low Pressure Damper Regulator.

In this Regulator the long lever is moved by a rubber diaphragm to which it is connected, and against which the pressure from the boiler acts. In order to prevent the steam from coming directly in contact with the rubber, a chamber is cast in the bottom of the Regulator, which, by the condensation of steam, is kept filled with water, and through the tube, as shown in cut, the water is conducted to the upper portion of the Regulator, where it acts directly against the rubber.

Complete, with independent doors.....each \$15.00  
Without doors ..... " 12.00

## AUTOMATIC DAMPER REGULATOR.

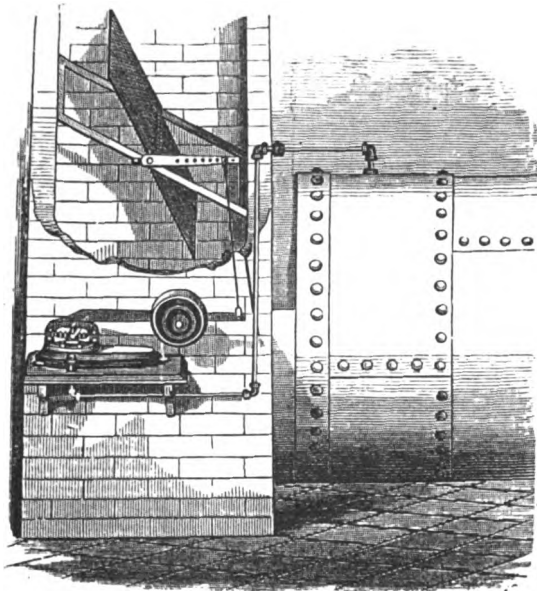


Fig. 95.

This Regulator is simple in construction, not liable to derangement, entirely protected from the obstructive effect of dust and dirt, and *practically frictionless* in all its parts.

The difficulties heretofore attending the use of the rubber diaphragm, in its changes of form and motion, are *fully obviated* in the invention herewith illustrated by the use of plain rubber packing.

No. 1.—Low Pressure, for heating.....	each \$20.00
" 2.—Up to 4 H. P.....	" 30.00
" 3.—From 4 to 20 H. P.....	" 40.00
" 4.—From 20 to 50 H. P.....	" 50.00
" 5.—50 H. P. and over.....	" 75.00

## KELLAM'S STEAM DAMPER REGULATOR.

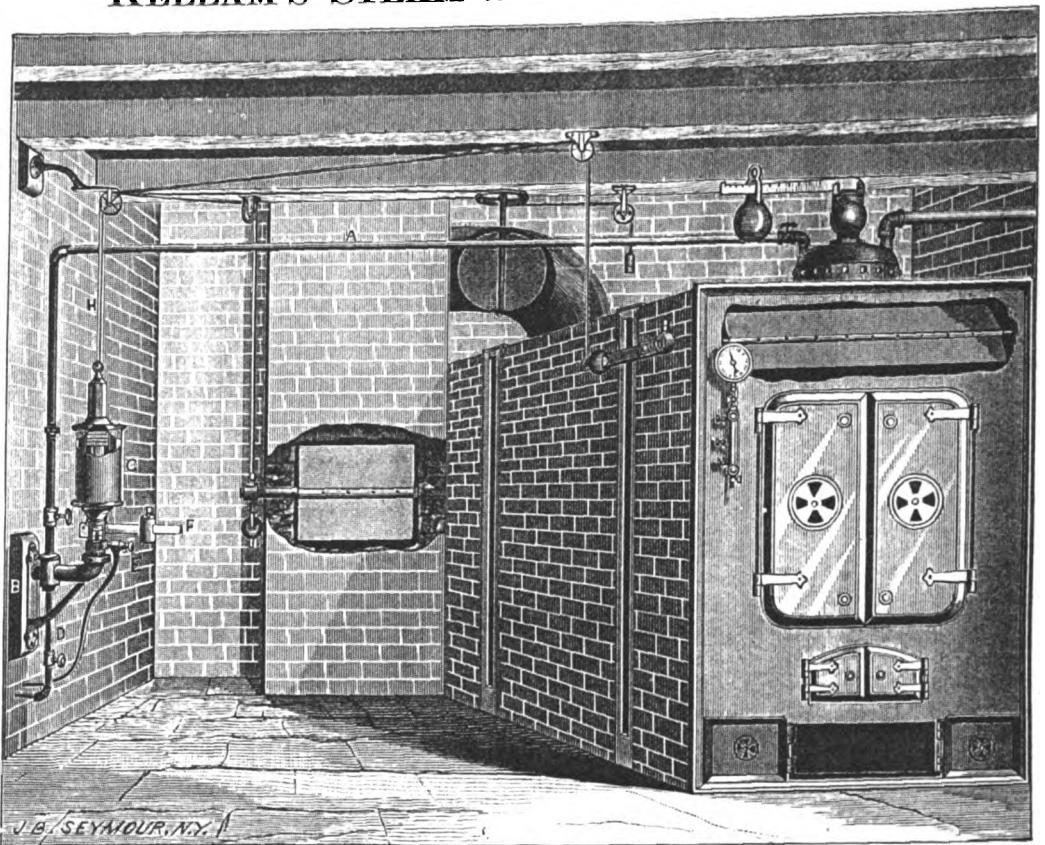


Fig. 96.

### Description Kellam's Steam Damper Regulator.

This Regulator is so constructed that it can be attached to any boiler or steam generator, and will maintain the steam at any desired pressure, any variations from which, either higher or lower, will check or open the draft as may be required. When the machine is once adjusted it requires no further attention, but will do its work perfectly. It is light and compact, simple in construction, positive in action, not liable to get out of order, will last many years, and is acknowledged by all who are using it as *the greatest fuel-saving machine ever invented*. It is also invaluable as to safety. This Regulator is not only sure to pay for itself many times over by its saving of fuel, but is worth more than its cost in its saving to boilers from strain by over-pressure. In places where the duties of engineers call them away from the boilers, this Regulator is of inestimable value, for as soon as the steam rises above the point of pressure at which it is set it is *sure* to close the draft; at the same time stopping the combustion of the fuel, and as *surely* opening the draft as soon as pressure begins to fall one particle below the point indicated. Its working is as precise and sure as machinery can possibly be made, and being made entirely of STEAM METAL, with no rubber or leather diaphragm springs or packing, there is nothing to wear out or get out of order. Its construction is such that it can be located at any point, and by the mode of its operation will control two or three separate dampers at different angles, within any reasonable distance. It will save from 10 to 25 per cent. of fuel, depending upon the amount of boiler and fire surface. All exposed parts being fully nickel-plated, it is an ornament to any boiler or engine room. Prices and sizes of Regulators dependent entirely upon the size and weight of dampers to be controlled, regardless of the number or capacity of boilers.

### Prices.

No. 1.—Designed to control damper 4 ft. diameter and larger, each	\$125.00	No. 3.—Designed to control damper 23 ins. to 4 ft. diameter, each	\$100.00
" 2.—" " " 23 ins. to 4 ft. diam., low pressure, "	115.00	" 4.—" " " 23 ins. and smaller.....	75.00

# THE IMPROVED JUDSON GOVERNORS,

Adapted to every Variety of Steam Engines.

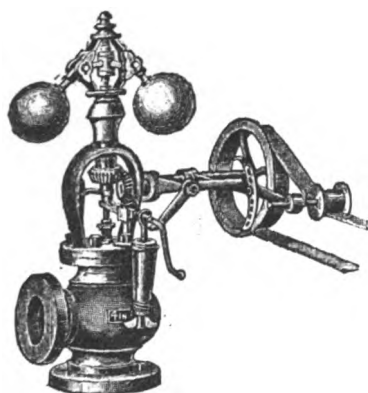


Fig. 97.

CLASS A, STANDARD.  
(Slow Speed).

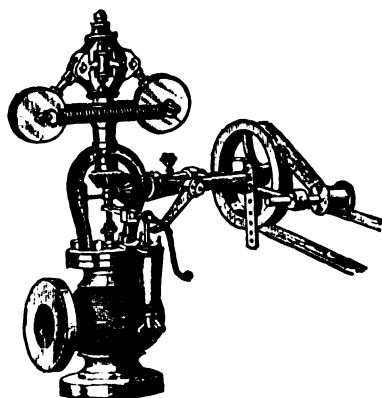


Fig. 98.

CLASS A, SPRING.  
(Higher Speed).

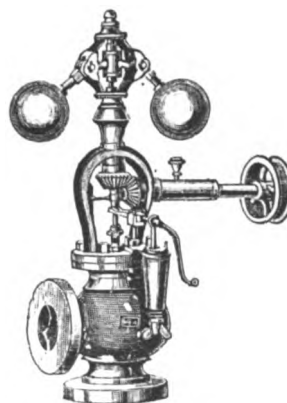


Fig. 99.

CLASS B, STANDARD.  
(Slow Speed).

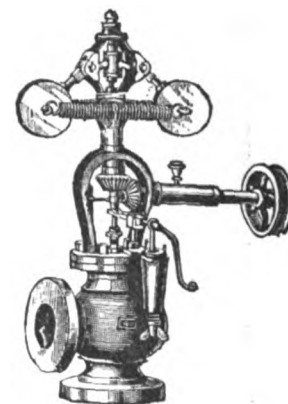


Fig. 100.

CLASS B, SPRING.  
(Higher Speed).

## GOVERNOR VALVE CHAMBERS.

Fig. 101.

Angle Chamber, base and side flanged from 2 1/4 to 12 inches.

Fig. 102.

Angle Chamber, base flanged, side screwed from 1/2 to 2 1/2 inches.

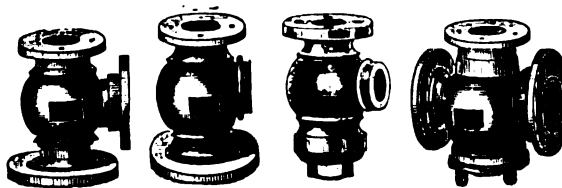


Fig. 101. Fig. 102. Fig. 103. Fig. 104.

Fig. 103.

Angle Chamber, base screwed, side screwed from 1/2 to 2 1/2 inches.

Fig. 104.

Horizontal Chamber, flanged from 2 1/2 to 12 inches.

Governors with Angle Chamber and Flanged Base will be sent in all cases unless otherwise ordered.

The Standard or Slow Speed Governor, Fig. 97, is too well known to require special description.

In the Spring or High Speed Governor, Fig. 98, the spiral springs are reliable, and in case of accident to one spring, the Governor will operate until the spring can be replaced. The position of the Governor may be either vertical, inclined, or horizontal.

Governors, Class A, Figs. 97 and 98, have Automatic Stop Motion, Spring Speeder and Sawyer's Lever.

Governors, Class B, Figs. 99 and 100, are same as Class A, except without Automatic Stop Motion.

In ordering Governors, state which Class is wanted, whether Standard or Spring, Plain or Finished and with or without Improved Angle or Globe Stop Valve.

## Prices.

SIZE OF GOVERNOR DIAMETER OF OPENING..	1/2	3/4	1	1 1/4	1 1/2	2	2 1/4	2 1/2	2 3/4	3	3 1/2	4	4 1/2	5 1/2	6	7	8	9	10
Price, Class B, Plain.....	\$16.00	18.00	20.00	22.00	25.00	30.00	35.00	40.00	45.00	50.00	60.00	71.00	83.00	94.00	108.00	122.00	150.00	185.00	240.00
Price, Class B, Finished.....	18.00	20.00	22.00	25.00	29.00	34.00	40.00	45.00	51.00	58.00	69.00	81.00	94.00	106.00	121.00	136.00	166.00	202.00	260.00
Price, Class A, Plain.....	23.00	25.50	29.50	36.00	42.00	48.00	53.00	59.00	71.00	83.00	96.00	109.00	124.00	140.00	170.00	210.00	241.00	270.00	
Price, Class A, Finished.....	25.00	28.50	33.50	40.00	47.00	53.00	59.00	67.00	80.00	93.00	107.00	121.00	137.00	154.00	186.00	227.00	261.00	290.00	
Price, Angle or Globe Stop Valve.....					8.00	9.75	11.50	12.50	15.50	18.00	22.00	25.00	32.00	38.00	44.00	50.00	80.00	103.00	140.00

## TABLE OF DIMENSIONS.

SIZE OF GOVERNOR DIAMETER OF OPENING.....	1/2	3/4	1	1 1/4	1 1/2	2	2 1/4	2 1/2	2 3/4	3	3 1/2	4	4 1/2	5 1/2	6	7	8	9	10
Diameter Base Flange.....	3 3/4	4 1/2	5	5 3/4	6 1/2	7 1/2	7 1/2	8 1/2	9	10	11	11 1/2	12	13	14	15 1/2	17	18	20
Diameter Side Flange.....	Ser'd.	Ser'd.	Ser'd.	Ser'd.	Ser'd.	Ser'd.	6 S'dor	6 1/2	7	8	9	10	10 1/2	11	12	13	14 1/2	16	17
From Center to Side Flange.....	1 5/8	2	2 1/8	2 1/2	2 3/4	3	4 3/4	4 3/4	5 1/4	5 3/4	6 1/2	7	7 1/4	7 3/4	8 1/4	9	10	11	12 3/4
From Base to Center of Inlet.....	2	2 1/4	2 3/8	3	3 3/8	4	4 1/2	4 3/4	5 1/8	5 3/4	6 1/2	7 1/4	7 1/2	7 3/4	8 3/4	9 1/4	10 3/8	11 3/4	13 1/2
Length (Horizontal) Chambers, Fig. 104.....	3 3/4	4 1/2	5	5 3/4	5 3/4	7 3/4	.....	9	.....	10 5/8	12	12 3/4	14	15	.....	16 7/8	.....	19 3/4	22
From Center to End of Shaft.....	7	7	7 1/2	10 1/4	11 1/4	12 1/2	13 3/4	14 1/4	14 1/4	15 1/2	17	18 1/2	21	21	22	23	23	24	26
Extreme Height.....	11 1/2	12 3/4	13 3/4	18 1/4	20 1/2	23	26 3/4	28	28 3/4	32 3/4	35 1/2	38	42	42 1/2	48	50	51	55 1/2	63
Greatest Swing of Balls.....	8 1/2	8 1/2	8 3/4	11	11 7/8	11 7/8	14 1/4	16 1/4	16 1/4	17 5/8	19 1/4	20 5/8	23 1/8	23 1/8	26 1/2	30 1/8	31 1/4	34 1/4	38
Speed Standard Governor.....	260	260	240	210	185	185	175	150	150	135	135	130	125	125	110	105	105	100	100
Speed Spring Governor.....	305	300	280	270	255	255	230	215	215	200	200	185	175	175	165	145	145	140	135
Diameter Pulley on Spring Governor....	2 1/2	2 1/2	2 1/2	3	3 1/2	3 1/2	4	4 1/2	4 1/2	5 1/2	6	6 1/2	7 1/2	7 1/2	9	10	10 1/2	12	14
Diameter Pulley on Standard Governor..	2 1/2	2 1/2	3	3 1/2	4	4	4 1/2	5	5	6	6 1/2	7 1/2	8	8	10	11	11	14	16
Width of Belt.....	1 1/4	1 1/4	1	1 1/4	1 1/2	1 1/2	2	2	2	2	2	2 1/2	2 1/2	2 1/2	3	3	3	3 1/2	3 1/2
Diameter Cylinders 300 Ft. Piston Speed	3	4	5	6	7	8	10	12	12	14	16	18	20	22	24	26	31	36	45
" " 400 " " "	2 1/2	3	4	5	6	8	9	10	11	12	14	16	18	20	22	23	27	31	39
" " 500 " " "			3 1/2	4 1/2	5	7	8	9	10	10	12	14	16	18	20	21	24	28	35
" " 600 " " "				4	4 1/2	6	7	8	9	9	11	13	15	16	18	19	22	25	32

All Governors are Complete with Speeder, Turned Flanged Pulley, Sawyer's Lever. No Extras.

In ordering, if informed of Speed of Engine and Diameter of Pulley on Engine Shaft from which Governor is driven, will put proper size of Pulley on Governor, otherwise the size of Pulley mentioned in table will be furnished with each Governor. When Stop Valves are ordered, Angle will be sent unless Globe is specified.

THORNTON N. MOTLEY, NEW YORK.

## THE PICKERING GOVERNORS.

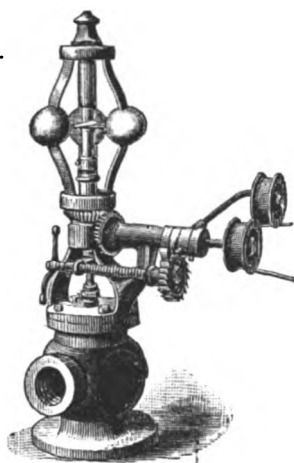


Fig. 105.  
CLASS A.

With Speeder, Sawyer's Lever  
and Automatic Stop.

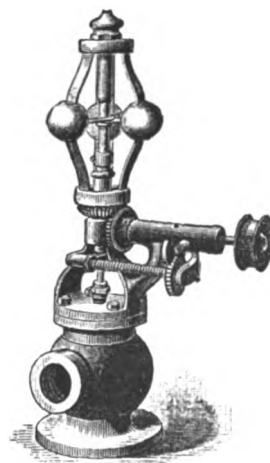


Fig. 106.  
CLASS B.

With Speeder.

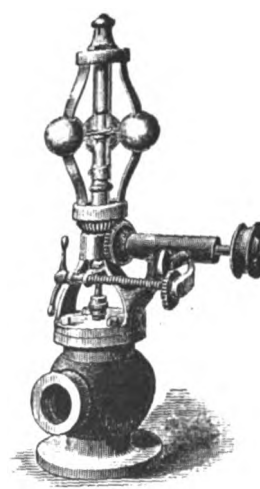


Fig. 107.  
CLASS B.

With Speeder and Sawyer's  
Lever.

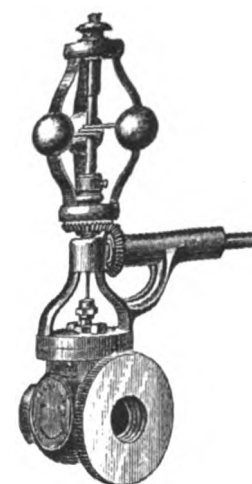


Fig. 108.  
PLAIN GOVERNOR.

With Horizontal Valve Chamber.

The openings can be either flanged or screwed, as required; but if not specified in order, will be sent as described below.

The Horizontal Governor (Fig. 109) may be ordered with either Horizontal or Angular Valve Chamber, and with or without Speeder.

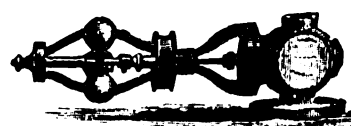


Fig. 109.

### HORIZONTAL GOVERNOR.

With Governor, Fig. 109, the following distances from center of Inlet to center of Pulley must be observed:

1 Inch.	1 1/4 Inch.	1 1/2 Inch.	2 Inch.
7 1/2 inches.	8 inches.	9 inches.	9 1/2 inches.

Governors, Class A, Fig. 105, have Automatic Stop, which closes the Valve in case of accident to the belt. This device is simple and certain in its action. Should the belt break or run off either pulley, the connection between Valve and Governor is severed, the Valve closed and locked in that position until the belt is properly adjusted.

Governors, Class B, Fig. 106, have Speeder only, and are the ones sent on orders, unless otherwise specified.

Governors, Class B, Fig. 107, have Speeder and Sawyer's Lever.

### Prices.

SIZE OF GOVERNOR.		1 <sub>2</sub>	3 <sub>4</sub>	1	1 <sub>1</sub> <sub>4</sub>	1 <sub>1</sub> <sub>2</sub>	2	2 <sub>1</sub> <sub>4</sub>	2 <sub>1</sub> <sub>2</sub>	2 <sub>3</sub> <sub>4</sub>	3	3 <sub>1</sub> <sub>2</sub>	4	4 <sub>1</sub> <sub>2</sub>	5	5 <sub>1</sub> <sub>2</sub>	6	7	8	9	10
DIAMETER OF STEAM PIPE.....																					
Price, Class B, Plain.....	\$16.00	18.00		20.00	22.00	25.00	30.00	35.00	40.00	45.00	50.00	60.00	71.00	83.00	94.00	108.00	122.00	150.00	185.00	215.00	240.00
Price, Class B, Finished.....	18.00	20.00		22.00	25.00	29.00	34.00	40.00	45.00	51.00	58.00	69.00	81.00	94.00	106.00	121.00	136.00	166.00	202.00	235.00	260.00
Price, Class A, Plain.....				23.00	25.50	29.50	36.00	42.00	48.00	53.00	59.00	71.00	83.00	96.00	109.00	124.00	140.00	170.00	210.00	241.00	270.00
Price, Class A, Finished.....				25.00	28.50	33.50	40.00	47.00	53.00	59.00	67.00	80.00	93.00	107.00	121.00	137.00	154.00	186.00	227.00	261.00	295.00
Price, Globe or Angle S. Valve.....						8.00	9.75	11.50	12.50	15.50	18.00	22.00	25.00	32.00	38.00	44.00	50.00	60.00	103.00	140.00	180.00

### TABLE OF DIMENSIONS.

SIZE OF GOVERNOR. DIAMETER OF STEAM PIPE....	1/2	3/4	1	1 1/4	1 1/2	2	2 1/4	2 1/2	2 3/4	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10
Diameter Base Flange.....	Scr'd or 3 1/2	Scr'd or 3 1/4	Scr'd or 4 1/2	Scr'd or 5	5 3/4	6 1/2	7 1/2	7 1/2	8 1/2	9	10	11	11	12	13	14	15	17	18	20
Diameter Side Flange.....	Scr'd	Scr'd	Scr'd	Scr'd	Scr'd	Scr'd	6 1/2	Scr'd or 6 1/2	7	8	8 1/2	9 1/2	10	11	12	13	14	15	16	18
From Center to Side Flange.....	1 1/2	1 1/2	2 1/4	2 1/2	3	3 3/8	4	4	4 1/2	4 1/2	5 3/8	6 1/2	6 1/2	7 1/2	8	8	8 1/2	10 3/4	11	12 3/4
From Base to Center of Inlet.....	1 3/4	2	2 1/2	3 1/4	3 1/2	4 1/4	5	5	5 3/8	5 3/8	6	7 1/4	7 1/4	8	8 1/2	8 1/2	9	9 1/2	11 1/2	13
From Center to End of Bearing.....	4	4	6	6	7 1/2	7 1/2	9	9	10 1/4	10 1/4	10 1/4	12	12	12 1/2	12 1/2	12 1/2	14	14	16	18
Extreme Height.....	14	14	18	19	25	26	30	30	35	35	36	42	42	48	50	52	54	56	59	62
Greatest Expansion of Balls.....	5	5	6 1/2	6 1/2	8	8	9	9	11	11	11	12	12	15	16 1/2	16 1/2	16 1/2	18	20	20
Speed of Governor.....	500	500	450	450	420	420	380	380	320	320	320	320	320	275	275	275	275	275	250	250
Diameter Pulley on Governor.....	1 1/2	1 1/2	2	2	2 1/2	2 1/2	3	3	4	4	4	5	5	5	6	6	7	7	8	8
Width of Belt.....	3	3	1 1/4	1 1/4	1 1/2	1 1/2	2	2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	3	3	3	3 1/2	3 1/2
Diameter Cylinder 300 ft. piston speed,.....	4	5	6	7	8	9	10	12	12	14	16	18	20	22	24	26	31	36	40	45
" " 400 " ".....	3	4	5	6	8	9	10	11	12	14	16	18	20	21	23	27	31	35	39	
" " 500 " ".....		3 1/2	4 1/2	5	7	8	9	9	10	12	14	16	18	19	21	24	28	31	35	
" " 600 " ".....			4	4 1/2	6	7	8	8	9	11	13	15	16	17	19	22	25	28	32	

If informed of Speed of Engine and Diameter of Pulley on Engine Shaft from which Governor is driven, will put proper size of Pulley on Governor; otherwise, the size of Pulley mentioned in table will be furnished with each Governor.



# WATERS' STEAM ENGINE GOVERNORS.

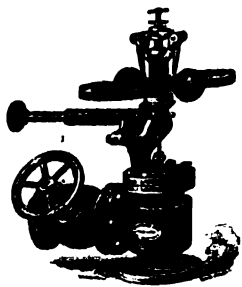


Fig. 110.

Fig. 110 shows the style including and above 2½ inches.

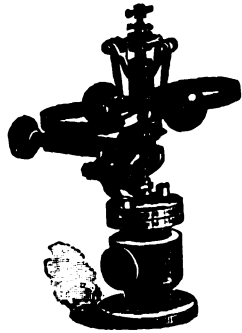


Fig. 111.

Fig. 111 shows the style including and below 2 inches, flanged base.

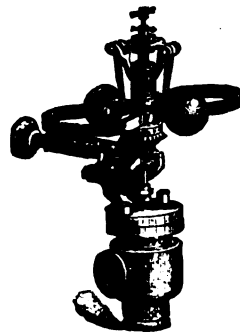


Fig. 112.

Fig. 112 shows the style including and below 2 inches, screw base.



Fig. 113.

Fig. 113 shows the style of Governor for Horizontal Steam Pipe, flanged or screwed, as desired.



Fig. 114.

Fig. 114 shows the style of Governor when bolted to the steam dome with side outlet either flanged or screwed.

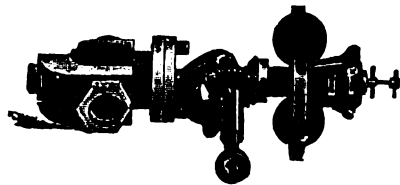


Fig. 115.

Fig. 115 shows the Vertical Governor used in a horizontal position, with a vertical steam pipe, for convenience in running the belt direct to engine shaft.



Fig. 116.

Figs. 116 and 117 show different styles of valve chambers, which I furnish with either vertical or horizontal tops, having one or both openings screwed or flanged.



Fig. 117.

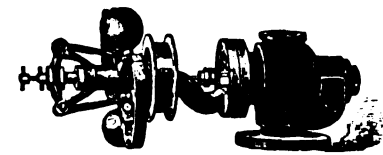


Fig. 118.

Fig. 118 shows the Improved Horizontal Governor, for either Vertical or Horizontal Steam Pipe. These are furnished with straight or angle valve chambers, and flanged or screwed openings. The size and position of the pulley are fixed. Made with flanges, or both ends screwed, as ordered.

## PRICES.

SIZE OF GOVERNOR— DIAMETER OF OPENING....	1½	3¼	1	1¼	1½	2	2¼	2½	2¾	3	3½	4	4½	5	5½	6	7	8	9	10
Price, Class B, Plain .....	\$16 00	18 00	20 00	22 00	25 00	30 00	35 00	40 00	45 00	50 00	60 00	71 00	83 00	94 00	108 00	122 00	150 00	185 00	215 00	240 00
Price, Class B, Finished .....	18 00	20 00	22 00	25 00	29 00	34 00	40 00	45 00	51 00	58 00	69 00	81 00	94 00	106 00	121 00	136 00	166 00	202 00	235 00	260 00
Price, Class A, Plain .....			23 00	25 50	29 50	36 00	42 00	48 00	53 00	59 00	71 00	83 00	96 00	109 00	124 00	140 00	170 00	210 00	241 00	270 00
Price, Class A, Finished .....			25 00	28 50	33 50	40 00	47 00	53 00	59 00	67 00	80 00	93 00	107 00	121 00	137 00	154 00	186 00	227 00	261 00	290 00

## TABLE OF DIMENSIONS OF CLASS "A" AND "B" GOVERNORS.

SIZE OF GOVERNOR— DIAMETER OF OPENING.....	1½	3¼	1	1¼	1½	2	2¼	2½	2¾	3	3½	4	4½	5	5½	6	7	8	9	10
Diameter of Base Flange .....	3½ in.	4	4½	5	5½	6½	7½	8	8½	9	10	11	12	12	13	14	15	16	18	20
Diameter of Side Flange .....	Ser'd.	Ser'd.	Ser'd.	Ser'd.	5 in.	6	6½	6½	7	8	8½	9½	11	12	12	12	13	14	16	18
Diameter of Space required for High Speed Governor .....	6 in.	8	8	10¼	10¾	12½	12½	12½	12½	15	15	19	19	19	19	25	25	26½	26½	30
Diameter of Space required for Slow Speed Governor .....	7 in.	9	9	13	14	18	18	18	22	22	25	25	25	25	25	34	34	40	40	48
From Center to Side Flange .....	1½ in.	17½	2½	2½	2½	3½	3½	4½	5½	6½	6½	7½	8½	8½	8½	10	10	12	12	13½
From Base to Center of Inlet .....	2 in.	23½	3	3½	3½	4½	4½	5	5½	6½	6½	7½	8½	8½	8½	10	10½	12	13	14
Extreme Height .....	10¼ in.	13½	14	16	16	21	21	24	24	28	30	34	38	38	38	42	44	58	62	66
From Center to end of Shaft .....	0 in.	8½	8½	9½	10½	13½	13½	14	14	16	17	20	21	22	22	23	24	26	28	30
Diameter of Pulley .....	2 in.	2½	2½	3	3½	4	4	4	4	4	4	4½	4½	5	5	6	6	8	8	10
Width of Belt .....	¾ in.	1	1	1½	1½	2	2	2	2	2	2	2½	2½	2½	2½	2½	2½	3	3	3
Revolutions per minute of High Speed Governor .....	500	400	400	325	325	300	300	275	275	250	250	250	250	250	250	250	170	170	140	120
Revolutions per minute of Slow Speed Governor .....	340	260	260	240	210	200	200	200	200	150	150	150	150	150	150	125	125	100	100	100
Diameter Cylinder, 300 ft. piston speed .....	3 in.	4	5	6	7	9	10	12	13	14	16	18	20	22	24	26	31	36	40	45
" " " 400 " " " .....	2 in.	3	4	5	6	8	9	10	11	12	14	16	18	20	21	23	27	31	35	39
" " " 500 " " " .....			3½	4½	5	7	8	9	10	10	12	14	16	18	20	21	24	28	31	35
" " " 600 " " " .....				4	4½	6	7	8	9	9	11	13	15	16	18	19	22	25	28	32

## AUTOMATIC SAFETY CHECK OR STOP MOTION, AND SAWYER'S LEVER.

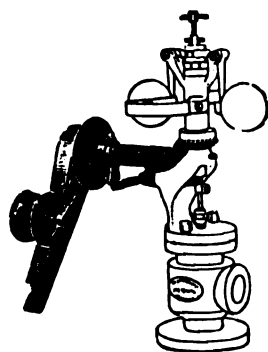


Fig. 119.

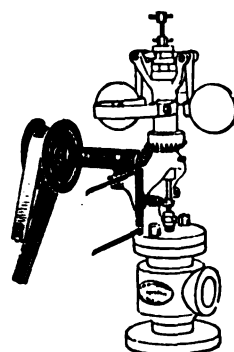


Fig. 120.

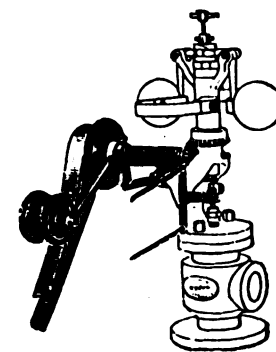


Fig. 121.

Class A, Automatic "Safety Check" or "Stop Motion."					
For Governors, 1, 1¼, 1½, 2, 2¼, 2½ Ins.					
Extra.....	\$3.00	3.50	4.50	6.00	7.00

Sawyer's Lever.  
Sawyer Lever on sizes from 1¼ to 2¾ inches only.

"Safety Check" or "Stop Motion" and Sawyer's Lever Combined.					
For 1¼, 1½, 2, 2½, 3, 3½ Ins.					
Extra, \$3.50	4.50	6.00	7.00	9.00	11.00

Fig. 119 shows the improved "Safety Check" or "Stop Motion" for 1, 1¼, 1½, 2, and 2½-inch Governors.

Fig. 120 shows "Sawyer's Lever," which enables engineer to control from a distance by cords.

Fig. 121 shows both the "Safety Check" and "Sawyer's Lever" on same Governor, on sizes 1¼ to 3½ inches inclusive.

N. B.—The Automatic Safety Stop, Automatic Safety Check and Sawyer's Lever are made with the Governor, and cannot be attached to ordinary Governors.

## THE HANCOCK INSPIRATOR.

## LOCOMOTIVE INSPIRATOR.

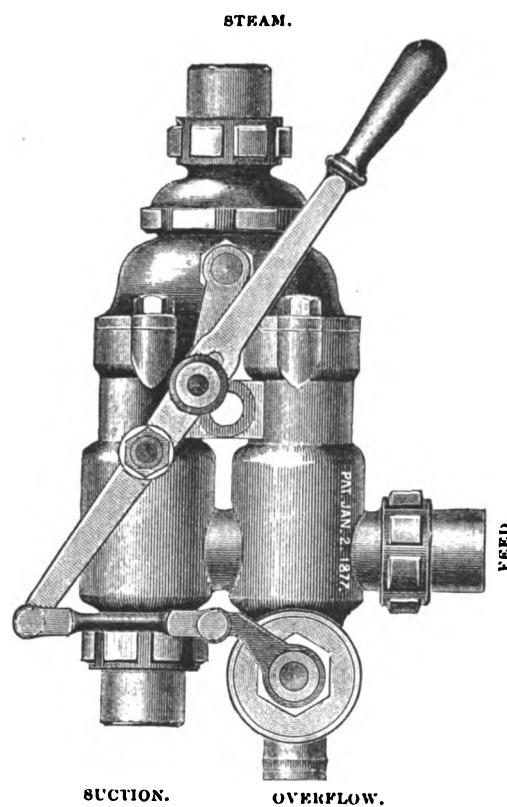


Fig. 122.

## SECTIONAL VIEW.

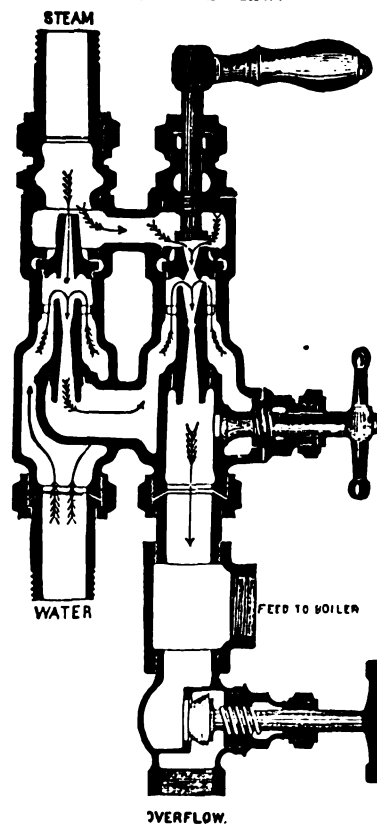


Fig. 123.

## STATIONARY INSPIRATOR.

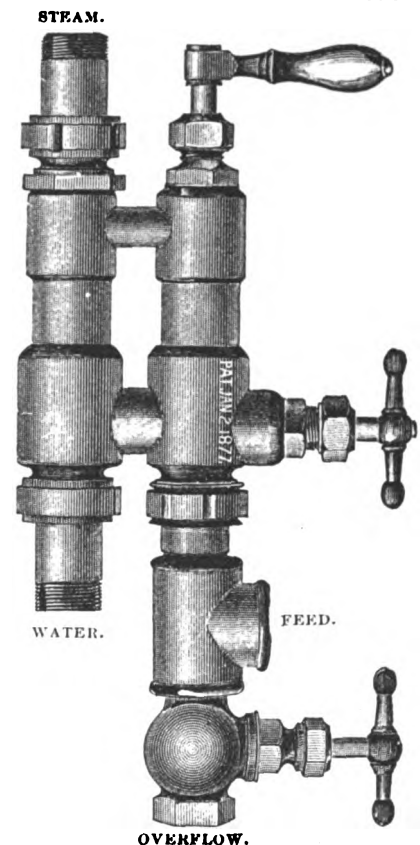


Fig. 124.

No Adjustment Required for Varying Steam Pressure. Has no Movable Parts to get out of order. Boilers steam better, and last longer, with the Inspirator than with a pump.

## LOCOMOTIVE INSPIRATOR.

Fig. 122.

This Inspirator is entirely reliable for feeding water to boiler either when at work or standing still. It will lift water as high as any pump, and deliver it to the boiler with a lower steam pressure than any other feeder known.

## Prices.

No. 10 } Suitable for Narrow		\$30.00	No. 35, 17 in. to 18 in. Cylinder		\$100.00
" 12 1/2 } Gauge and Elevated		32.50	" 37 1/2, 18 in. "	Steam..... 1 1/4 in.	110.00
" 15 } Railroads,	3/4 inch connections all around,	35.00	" 40, 18 in. to 20 in. "	Suction and Feed. 1 1/2 "	120.00
" 17 1/2, 12 in. to 14 in. Cylinder,	Steam..... 3/4 in.	\$40.00	" 42 1/2, 18 in. to 20 in. Cylinder	Steam and Feed. 1 1/2 "	\$140.00
" 20, 12 in. to 14 in. Cylinder,	Suction and Feed.. 1 "	50.00	" 45, 18 in. to 20 in. "	Suction..... 2 "	150.00
" 22 1/2, 13 in. to 14 in. Cylinder		\$65.00	" 47 1/2, 18 in. to 20 in. "		155.00
" 25, 14 in. "	Steam and Feed.... 1 1/4 "	70.00	" 50, 18 in. to 20 in. "		160.00
" 27 1/2, 15 in. "	Suction..... 1 1/2 "	75.00			
" 30, 16 in. "		85.00			
" 32 1/2, 16 in. to 17 in. "		90.00			

When ordering an Inspirator, give the size of Cylinder and Service.

The Locomotive Inspirator has the same capacity as the corresponding number of stationary; see below.

## Prices for Attachments.

Steam or Starting Valve for No. 20 and smaller.....	\$7.50	Union Joints for No. 20 and smaller.....	\$3.25
Check Valve " " ".....	7.50	Steam or Starting Valve for No. 22 1/2 or larger.....	10.00
Patent Lazy Cock " " ".....	10.00	Check Valve " " ".....	10.00
Quarter Turns " " ".....	3.00	Patent Lazy Cock " " ".....	15.00
Return Bends " " ".....	3.00	Patent Lazy Cock, 2 1/2 in. " " ".....	18.00

## STATIONARY INSPIRATOR.

Figs. 123 and 124.

This Inspirator may be regulated by the valves to feed more or less water, as required. It will start at a lower steam pressure than any engine, thereby obviating the necessity of moving a mass of machinery for running a power pump, or raising sufficient pressure for running a steam pump, if necessary to fill the boiler when the machinery is not in operation, thus making a great saving in fuel and wear and tear of pumps, etc., as only a small head of steam need be kept up.

The Inspirator will lift water 25 feet with a steam pressure of 45 lbs. It will take water at 140° Fahrenheit on a lift of 3 or 4 feet, and on a lift of 25 feet it will take it at from 100° or 110° Fahrenheit.

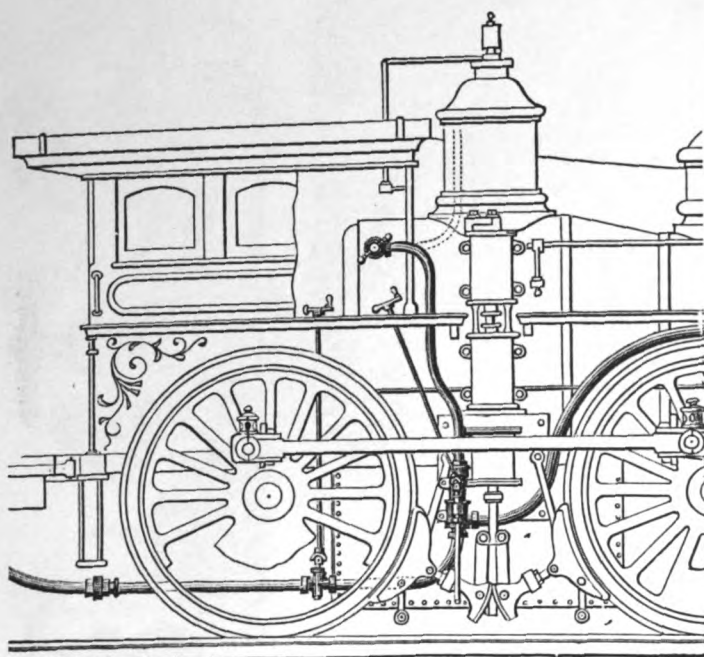
## Prices.

No. of Inspirator.	Suction and Feed.	Steam.	Galls. per hour, 60 lbs. pressure.	Price.	No. of Inspirator.	Suction and Feed.	Steam.	Galls. per hour, 60 lbs. pressure.	Price.
No. 7 1/2.....	3/8 in.	3/8 in.	60	\$16.00	No. 22 1/2.....	1 1/4 in.	1 in.	700	\$55.00
" 8 1/2.....	1/2 "	3/8 "	85	18.00	" 25.....	1 1/4 "	1 "	900	60.00
" 10.....	1/2 "	3/8 "	120	20.00	" 30.....	1 1/2 "	1 1/4 "	1260	75.00
" 12 1/2.....	3/4 "	1/2 "	220	25.00	" 35.....	1 1/2 "	1 1/4 "	1740	90.00
" 15.....	3/4 "	1/2 "	300	30.00	" 40.....	2 "	1 1/2 "	2230	110.00
" 17 1/2.....	1 "	3/4 "	360	40.00	" 45.....	2 "	1 1/2 "	2820	125.00
" 20.....	1 "	3/4 "	540	45.00	" 50.....	2 1/2 "	2 "	3480	150.00

# FRIEDMANN'S PATENT INJECTORS.

## CLASS W.F. NON-LIFTING.

For Locomotives.



POSITION ON LOCOMOTIVE.  
Fig. 125.

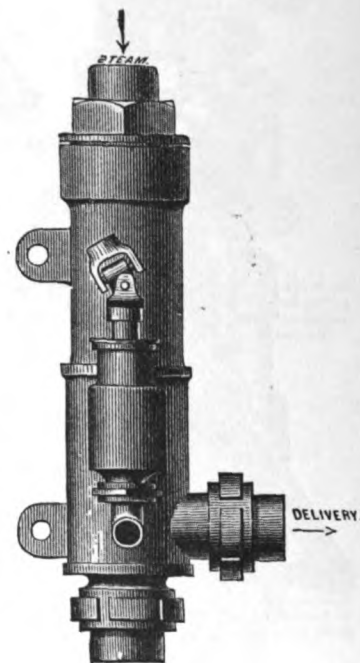
This style of Non-lifting Injector is self-adjusting under variable steam pressure. It does not contain any movable parts whatever.

It is capable of regulating the water supply to meet the demands of the engine under different degrees of pressure and rates of speed.

It has no water valve, but is fed through the ordinary lazy cock of the locomotive.

It is operated by simply opening and closing the steam valve in starting and stopping, and is virtually a "one motion" Injector of the most effective kind. The feed water may be reduced when required to more than half the stated capacity of the Injector by partially closing the lazy cock.

NOTE.—The rod and handle extending into the Cab, as shown in illustration, is only to be used to close and open the overflow valve when the Injector is wanted to do duty as a heater cock to heat the water in the tender. At all other times the overflow must be kept open. This Injector does not waste water through the overflow under any circumstances.



EXTERIOR VIEW.  
Fig. 126.

### Prices.

Size Numbers.....	4	5	6	7
Best Gun Metal.....each	\$55.00	70.00	85.00	100.00
Size Numbers.....	8	9	10	
Best Gun Metal.....each	\$120.00	130.00	150.00	

### Sizes for Connections.

Numbers.....	4	5	6	7	8	9	10
Steam.....inches,	1	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	2
Suction....."	1	1 1/4	1 1/4	1 1/2	1 1/2	2	2
Delivery....."	1	1 1/4	1 1/4	1 1/2	1 1/2	2	2

## THE MONITOR.

For Locomotives.

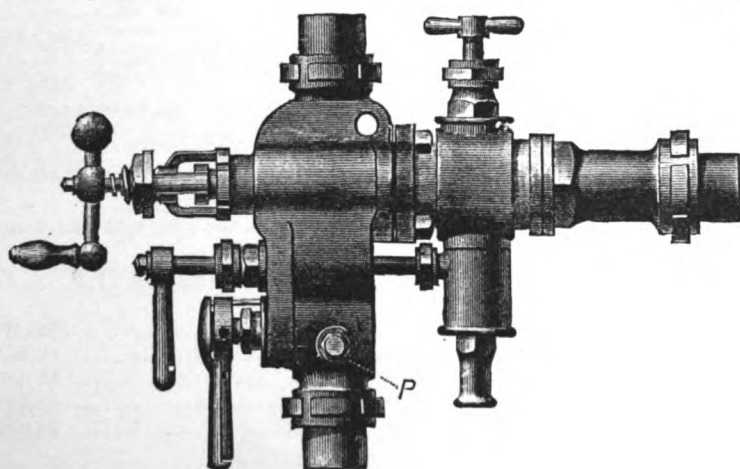
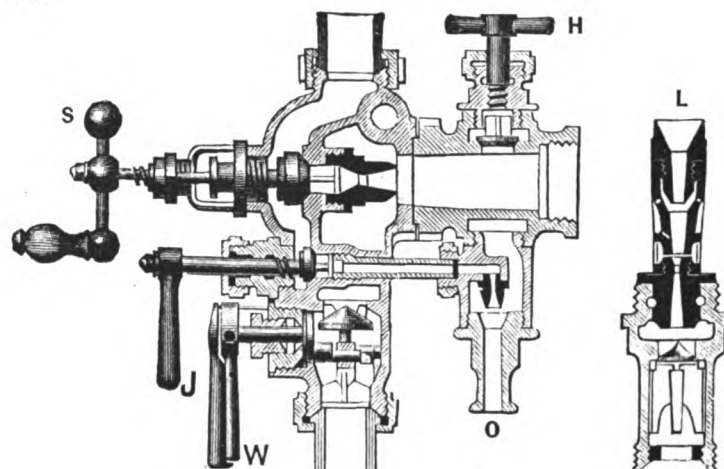


Fig. 127.



SECTIONAL VIEW.  
Fig. 128.

### Descriptive List of Parts.

S, steam spindle; J, lifting jet; W, water valve; H, heater cock; O, overflow; L, line check, with nozzles attached drawn out; P, plug for oiler.

This Injector does not waste water at overflow by ordinary variation of working steam pressure, but steadily performs its duty, whether the lazy cock is wide open or throttled down until almost shut. It works regularly and evenly, whether the engine is running fast or slow, while reversing, applying brakes, and during ordinary stoppages. It is also capable of running heavy as well as light trains, the quantity of water needed being easily regulated by the lazy cock attached.

It is provided with an independent lifting jet, which enables the Injector to start promptly at all times. This is a peculiar feature, and very important, because it allows the Injector to start as promptly after doing its duty as a heater cock as at first.

### Prices.

Size Numbers.....	4	5	6	7
Best Gun Metal.....each	\$60.00	75.00	90.00	110.00
Size Numbers.....	8	9	10	
Best Gun Metal.....each	\$125.00	140.00	160.00	

### Sizes for Connections.

Numbers.....	4	5	6	7	8	9	10
Steam.....inches,	3/4	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	2
Suction....."	3/4	1 1/4	1 1/4	1 1/2	2	2	2
Delivery....."	3/4	1 1/4	1 1/4	1 1/2	2	2	2



THE MONITOR INJECTOR.

Lifting and Non-lifting, for Portable, Stationary and Marine Boilers.

General Description.

The "Monitor" is an adaptation of the well-known Locomotive Injector of that name to stationary boilers, and possesses all the characteristics of that splendid instrument, namely, great range of capacity, steadiness of working power under variable steam pressure, compactness of form and handiness to engineer of controlling parts. These Injectors are also capable of being worked down to half their capacity or more by regulating with water valve only. For these and various other reasons that might be given, they are well adapted to feed batteries of boilers, where all may, or may not, be required to be operated at the same time. They are also for the same reasons peculiarly fitted to supply boilers of portable and traction engines, and all other boilers where from the jarring or unsteady conditions of circumstances under which they are required to work, ordinary injectors would break and fail to do their duty. They have fixed nozzles, and no movable parts to get out of order.

MONITOR, CLASS C, NON-LIFTING.

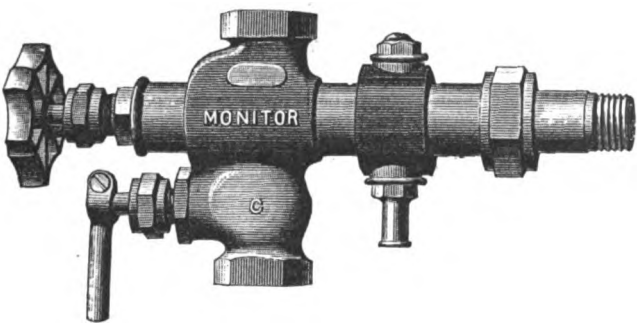


Fig. 129.

Class C, Non-lifting, is applied in all cases where there is a head of water or pressure from hydrant, dam or reservoir. This class of Injector should be placed below the level of the water supply, and if needed can be made so as to work at less than five pounds steam pressure.

MONITOR, CLASS D, LIFTING.

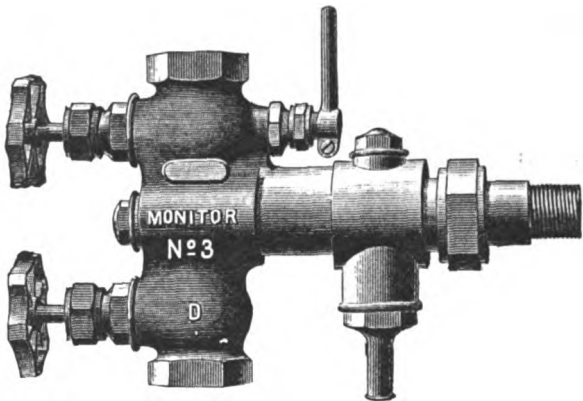


Fig. 130.

Class D, Lifting, is applied only when water to feed boilers is taken from rivers, ponds, reservoirs, wells, etc., where there is no head of water, and will raise water, according to steam pressure, from six to twenty-five feet, and put same in boiler.

Capacity and Prices, Monitor Injectors.

Number of Injector.....	2	2½	3	4	5	6	7	8	9	10	12	14	16	18	20
Size of Pipe Connections...inches.	½	½	¾	1	1¼	1¼	1½	1½	2	2	2½	2½	3	3	3½
Delivery per hour { 120 lbs.	170	255	375	615	900	1230	1650	2130	2640	3240	4320	6100	8050	9850	12000
in Gallons at a { 60 "	135	210	285	480	690	960	1260	1590	1980	2465	3300	4650	6050	7550	9420
steam pressure of { 20 "	90	120	195	315	450	570	840	1050	1310	1635	2350	3200	4180	5390	6530
Prices Class C, Fig. 129.....	\$17.00	21.00	27.00	40.00	50.00	60.00	75.00	90.00	110.00	130.00	160.00	200.00	250.00	325.00	400.00
" " D, " 130.....	19.00	24.00	32.00	45.00	55.00	65.00	80.00	100.00	120.00	140.00	180.00	225.00	275.00	350.00	450.00

These Injectors are fitted with steam and water valves, which are usually separate and charged extra.

MESSINGER'S RELIABLE INJECTOR.

ALL COMPOSITION, NICKEL PLATED.

For Locomotive, Stationary and Marine Boilers.

This machine has an auxiliary attachment for draughting hot water, and for increasing the capacity of the machine at will, and is the only Injector that will utilize boiling hot water. It will feed two boilers of unequal pressure, or will feed a boiler and deliver into a tank at the same time.

The auxiliary attachment can be used to throw into the boiler any boiler compound in solution, without stopping the machine or lowering steam pressure, an advantage often worth the cost of the machine.

Prices and Capacity.

Number of Injector...	0	1	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10
Size of Connections...ins.	¾	¾	¾	1	1	1¼	1¼	1	1	1¼	1¼	1½	2	2	2½
Galls. in Main Suction ....	70	100	150	200	250	330	450	585	700	880	1000	1500	2000	2400	3000
Galls. in both Suctions ....	90	120	175	230	300	380	520	660	820	1022	1300	1840	2640	3200	4000
Class A, lifting.....	\$16.00	18.00	20.00	22.00	25.00	30.00	38.00	45.00	52.00	60.00	70.00	85.00	100.00	120.00	140.00
Class B, Non-lifting.....	15.00	17.00	18.00	19.00	22.00	25.00	33.00	40.00	47.00	55.00	65.00	75.00	90.00	110.00	130.00

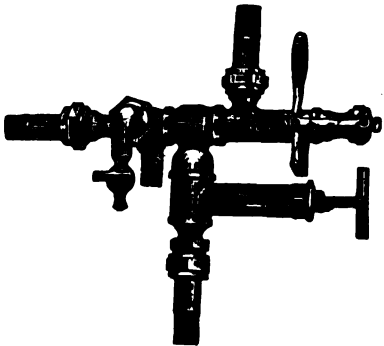


Fig. 131.

## THE KORTING DOUBLE TUBE INJECTOR.

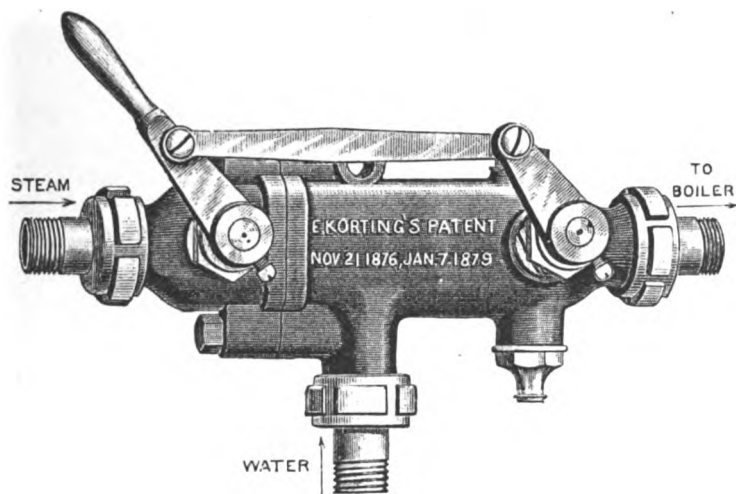


Fig. 132.

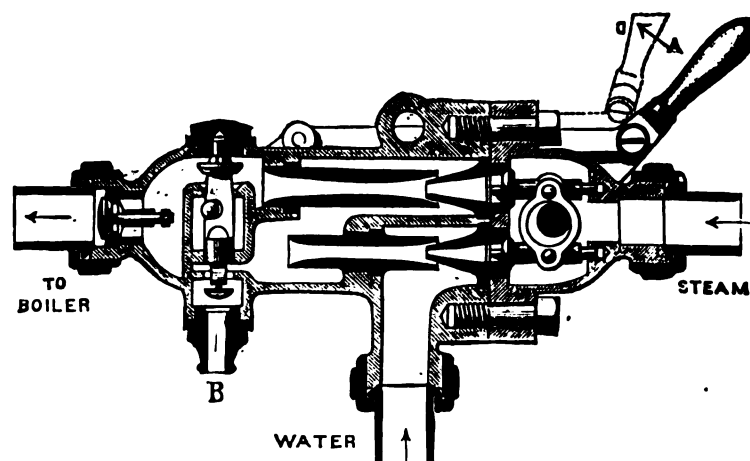


Fig. 133.

### Description.

Steam Users and Engineers in every part of the world recommend this boiler feeder, on account of its having but one handle to operate, and so easily understood without any instruction.

In the position as shown in Fig. 133, the valves are closed; by simply moving the handle A over, as indicated by the dotted lines D, the Steam Valve is opened, and as soon as water appears at overflow B, then push the handle over as far as possible and the Injector is feeding the boiler. There are no movable parts in its construction. Every machine is tested at factory, and warranted in every particular.

SINGLE TUBE INJECTORS require careful adjustment to insure their working, but this DOUBLE TUBE INJECTOR will work, requiring no adjustment, when steam pressure varies.

### Prices and Capacity.

No. of Injector.	Price of Injector.	Horse Power.	Gallons per Hour.	Pipe Connections.	Price of Strainer.
No. 1	\$23.00	1 to 12	100	1/2 inch	\$2.00
" 2	28.00	20	150	1/2 "	2.00
" 3	38.00	40	300	3/4 "	2.50
" 3 1/2	46.00	50	400	3/4 "	2.50
" 4	55.00	70	550	1 "	3.00
" 5	60.00	85	650	1 1/4 "	4.00
" 6	65.00	120	900	1 1/4 "	4.00
" 7	85.00	160	1260	1 1/2 "	5.00
" 8	100.00	200	1750	1 1/2 "	5.00
" 9	120.00	250	2200	2 "	7.00
" 10	135.00	310	2800	2 "	7.00
" 12	165.00	475	3500	2 1/2 "	10.00

## THE KORTING DOUBLE TUBE INJECTOR,

FOR LOCOMOTIVES, OPERATED ENTIRELY BY ONE HANDLE.

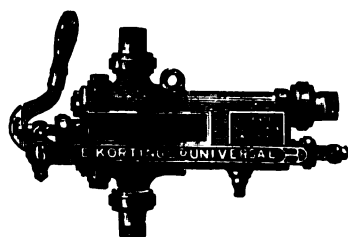


Fig. 134.

This Injector will work when suction is heated, and will lift hot water. There is no danger of freezing, and sudden jarring does not affect it.

### Prices and Capacity.

No. of Injector.	Price of Injector.	Connections.	Size of Steam Cyl.	Steam Pressure 120 lbs. per hour.	Gallons per hour.	Price S'm Stop Valve on Boiler.	Price Main Check Valve on Boiler.	Price Combined Water Register Dirt Stop and Valve.	Price Coupling Band.	Price Plain Dirt Stop.
No. 2	\$32.00	1 1/2 in.		23	172	\$2.50	\$2.50	\$10.00	\$0.65	\$2.00
" 3	42.00	3/4 "		50	375	3.50	3.50	12.00	1.00	2.50
" 4	62.00	1 "	10 & 11 in.	90	675	4.00	4.00	15.00	1.50	3.00
" 5	74.00	1 1/4 "	12 & 13 "	106	795	6.00	6.00	17.50	2.00	4.00
" 6	86.00	1 1/4 "	14 & 15 "	143	1072	6.00	6.00	17.50	2.00	4.00
" 7	98.00	1 1/2 "	16 "	205	1537	8.50	8.50	20.00	2.50	5.00
" 8	112.00	1 1/2 "	17 "	272	2040	8.50	8.50	20.00	2.50	5.00
" 9	130.00	2 "	18 & 19 "	328	2460	10.00	10.00	25.00	3.00	7.00
" 10	150.00	2 "	20 "	406	3045	10.00	10.00	25.00	3.00	7.00
" 12	220.00	2 1/2 "		605	4537	13.00	13.00	35.00	3.50	10.00
" 14	300.00	2 1/2 "		815	6112	13.00	13.00	35.00	3.50	10.00
" 16	400.00	3 "		1007	7552	.....	.....	50.00	.....	15.00

## THE ECLIPSE INJECTOR.

This Injector works under any pressure of steam, from 5 up to 150 lbs. It is not liable to break while working.

When it becomes necessary to refill the boiler with cold water after cleaning out, by closing the overflow and removing the working part, the water from the tank or reservoir will flow through the Injector, the opening being the size of the connecting pipe.

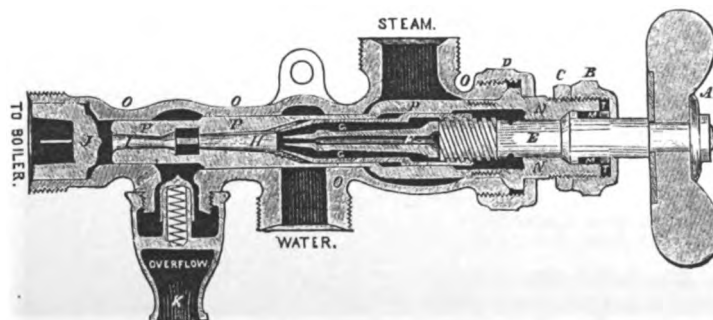


Fig. 135.

The water, by the use of this Injector, is heated to 200° Fahrenheit; hence no heater is necessary, and can be dispensed with.

For locomotives it is particularly desirable, as by closing the cock on the overflow the steam can be thrown back into the tender, heating the water therein, thus obviating all danger of freezing, without any other attachment being necessary.

### Prices and Capacity of Injectors.

NUMBERS.....	A	1	2	3	4	5	6	7	8	9	10	12
Prices complete.....each,	\$15	\$18	\$22	\$35	\$50	\$60	\$75	\$90	\$100	\$115	\$130	\$150
" inside working parts.....	\$5	\$7	\$10	\$12	\$15	\$20	\$23	\$25	\$27	\$30	\$40	\$50
Size of Pipe Connections.....	1/4	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/2	3	4	6
Nominal Horse power, 70 lb. pres.	8	20	30	55	85	125	175	225	285	350	500	66
Number of Gallons per minute...	3/4	2 1/2	4	8	12	18	24	31	39	48	66	66

### Prices of Special Locomotive Attachments.

NUMBER OF INJECTOR ...	2	3	4	5 & 6	7 & 8	9 & 10	12
Sizes.....Inches,	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Starting Valves.....each,	\$5.00	7.00	8.00	11.00	13.00	16.00	18.00
Water Cocks.....	1.75	2.50	3.60	6.00	6.50	9.50	14.00
Check Valves.....	4.25	5.00	6.50	8.00	9.00	9.50	14.00
Dipper for Water Pipe ..	0.50	0.50	0.50	0.65	0.80	1.00	1.25

Prices for larger sizes furnished on application.

Extension Rod, with universal joint.....each, \$5.00

## THE IMPROVED ECLIPSE INJECTOR, ESPECIALLY ADAPTED FOR LOCOMOTIVES.

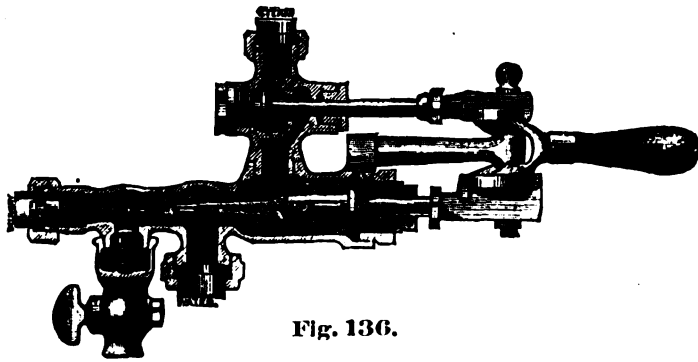


Fig. 136.

The "Improved" differs from the regular Eclipse only in the fact that it is operated entirely by a Lever in one motion, which starts, regulates, and stops it, and requires no Valves outside of those contained in the Injector. The entire mechanism for operating the Injector is on the outside, so that the engineer can readily see that it is in good working order.

The Injector can have the inside working parts removed, same as regular Eclipse, the inner mechanism being the same in both Injectors.

### Prices and Capacity.

NUMBERS.	2	3	4	5	6	7	8	9	10	12
Prices Complete.....	\$25.00	40.00	56.00	68.00	83.00	100.00	110.00	127.00	142.00	165.00
Prices Inside Working Parts.....	10.00	12.00	15.00	20.00	23.00	25.00	27.00	30.00	40.00	50.00
Prices Boiler Check Valves.....	4.25	5.00	6.50	8.00	8.00	9.00	9.00	9.50	9.50	14.00
Size of Pipe Connections.....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$	2	2	$2\frac{1}{2}$
Nominal Horse-Power at 70 lbs.....	20	35	65	95	140	175	230	300	350	500
Number of Gallons per minute.....	3	5	9	13	19	24	32	41	48	67

## THE DUPLEX INJECTOR.

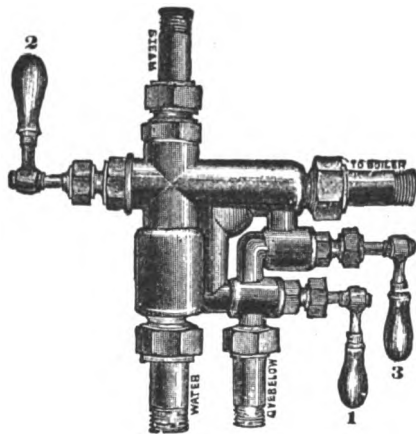


Fig. 137.

This machine will lift water twenty-five feet and force it into the boiler, and work equally well with varying pressures of steam without adjustment. It will put water into the boiler varying in temperature all the way up to 185° of heat, according to amount of steam pressure carried. It can be started when hot.

It is always ready. The internal construction of this machine is such as to preclude all possibility of its giving out quickly, and, under ordinary circumstances, will last as long, if not longer than a pump. The arrangement of the internal mechanism is such that the "jet" is very powerful, and any jar to the pipes will not cause the stream to break.

Each machine is thoroughly tested before leaving the works, and is warranted to work if put up according to directions.

### Prices and Capacity.

Size Connections.					
No. of Injector.	Water Suction and to Boiler. Inches.	Steam. Inches.	Gallons per Hour. 60 lbs. Pressure.	Horse Power.	Prices.
3	$\frac{3}{8}$	$\frac{1}{4}$	65	2 to 4	\$16.00
$3\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{4}$	90	3 to 6	18.00
5	$\frac{1}{2}$	$\frac{3}{8}$	130	8 to 15	20.00
7	$\frac{3}{4}$	$\frac{1}{2}$	240	16 to 30	25.00
9	$\frac{1}{2}$	$\frac{1}{2}$	320	30 to 40	30.00
11	1	$\frac{3}{4}$	560	40 to 80	45.00
13	$1\frac{1}{4}$	1	960	80 to 125	60.00
15	$1\frac{1}{2}$	1	1280	100 to 170	75.00
17	$1\frac{1}{2}$	$1\frac{1}{2}$	1760	150 to 220	90.00
19	2	$1\frac{1}{2}$	2260	200 to 300	110.00
21	2	$1\frac{1}{2}$	2860	250 to 375	125.00
23	$2\frac{1}{2}$	2	3480	350 to 450	150.00
25	3	2	4260	450 to 600	200.00
27	$3\frac{1}{2}$	$2\frac{1}{2}$	6500	600 to 850	400.00
29	4	$2\frac{1}{2}$	8000	800 to 1050	550.00

## THE UNION INJECTOR.

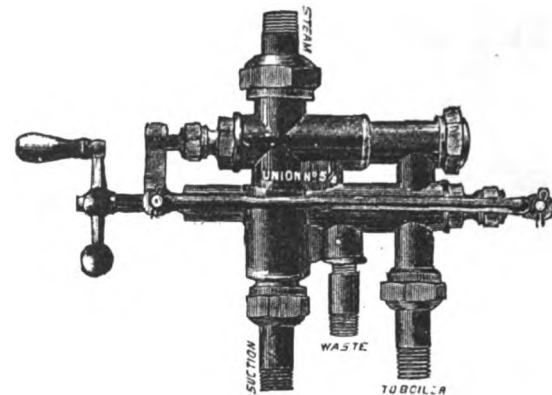


Fig. 138.

The above is called a single lever (or one movement) machine, and, in operating, its extreme simplicity is evident from the fact that the handle is not required to be stopped at any particular point in its outward movement, the stopping point being regulated by the distance you can turn the handle.

Should it become necessary at any time to take this machine apart for the purpose of cleaning or to examine the internal parts for obstructions in the jets, it can be done by disturbing but one pipe connection.

Should the machine become clogged with dirt, or should it become coated with lime, anyone can take it apart and clean it, thus making it the simplest one-lever Injector made. There is not a spring about it to get weak and out of order. There is not a check-valve in it to get stuck and prevent its working.

I make them to lift up to twenty-five feet, and they will work at all pressures of steam without readjustment.

### Prices and Capacity.

Size Connections.					
No. of Injector.	Water Suction and to Boiler. Inches.	Steam. Inches.	Capacity. Gallons per Hour.	Horse Power.	Prices.
$3\frac{1}{2}$	$\frac{3}{8}$	$\frac{3}{8}$	90	4 to 6	\$22.00
5	$\frac{1}{2}$	$\frac{3}{8}$	130	8 to 15	25.00
$5\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	165	12 to 20	28.00
7	$\frac{3}{4}$	$\frac{1}{2}$	250	18 to 34	35.00
9	$\frac{3}{4}$	$\frac{3}{4}$	320	25 to 40	40.00
$9\frac{1}{2}$	1	$\frac{3}{4}$	450	30 to 60	50.00
11	1	1	600	40 to 80	60.00
13	$1\frac{1}{4}$	1	850	75 to 115	65.00
15	$1\frac{1}{4}$	$1\frac{1}{4}$	1,280	85 to 170	85.00
$15\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{4}$	1,500	100 to 200	100.00
17	$1\frac{1}{2}$	$1\frac{1}{2}$	1,760	125 to 235	120.00

## FRIEDMAN'S EJECTORS OR WATER ELEVATORS. FOR RAISING WATER AND CONVEYING LIQUIDS.

These Ejectors are of two classes—viz.:

CLASS F, FORCING, AND L, LIFTING.

The Ejector will force water or liquids as follows:

At 14 lbs. steam pressure.....	20 feet in height.
" 28 " " " .....	40 " "
" 42 " " " .....	60 " "
" 56 " " " .....	75 " "
" 70 " " " .....	90 " "

And upward, according to pressure.

To Operate the Ejectors.

To Start, open the valve or cock in steam pipe slightly for a few seconds, to let the condensed steam blow through, then open full. To Stop, close the steam valve.  
N. B.—Steam to operate the Ejector should be taken from the highest part of the boiler; especially in case of long distances is dry steam necessary.

### Capacity and Prices of Ejectors.

NUMBER.....	000	00	0	1	2	3	4	5	6
Delivery per hour in galls. at 45 lbs. steam pressure...	250	500	900	1200	2000	3000	5000	8000	10000
Diameter of Steam Pipe in inches.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	2	$2\frac{1}{2}$
Diameter of Delivery Pipe in inches.....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	4
Diameter of Suction Pipes in inches.....	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	$2\frac{1}{2}$	3	4
Boiler capacity, horse power.....	3 to 4	3 to 4	3 to 4	5 to 6	7 to 8	10 to 15	25	35	45
Price.....	\$8.00	14.00	20.00	30.00	50.00	75.00	100.00	125.00	150.00

At 80 lbs. steam pressure the Ejector will throw 50 per cent. more water.

Bilge Pumps and larger sized Ejectors made to order by contract.

In ordering Ejectors please give—1st. The nature, quantity and temperature of the liquid; also, the depth of suction, and the height to which it has to be raised. 2d. The pressure and quantity of steam available for needed purposes.

Attention to these details will ensure an Ejector suitable to all the various conditions under which they may be applied.

## SCHUTTES' EJECTOR OR WATER LIFTER.

Made Entirely of Brass.

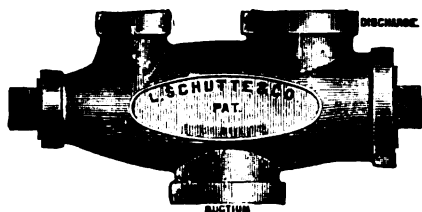


Fig. 141.

For raising and conveying water and other liquids from mines, quarries, rivers, wells, tanks and cisterns, and for use in railroad water stations and factories, specially adapted for breweries, distilleries, sugar refineries and tanneries.

Also used as Bilge Pumps on vessels. To start the Ejector it is only required to open steam valve. Larger sizes to order.

### Prices and Capacity Schuttes' Ejectors.

Size.	Price of Ejector.	Capacity per hour in gallons.	Suction and Discharge Pipe.	Steam Pipe.	Price of Strainer.
No. 0	\$6.00	300 galls.	$\frac{1}{2}$ in.	$\frac{1}{4}$ in.	\$0.60
" 1	8.00	500 "	$\frac{3}{4}$ "	$\frac{3}{8}$ "	0.70
" 2	10.00	800 "	1 "	$\frac{1}{2}$ "	0.85
" 3	15.00	1200 "	$1\frac{1}{4}$ "	$\frac{3}{4}$ "	1.15
" 4	20.00	1700 "	$1\frac{1}{2}$ "	$\frac{3}{4}$ "	1.45
" 5	30.00	3000 "	2 "	1 "	2.00
" 6	40.00	5000 "	$2\frac{1}{2}$ "	$1\frac{1}{4}$ "	2.85
" 7	50.00	7500 "	3 "	$1\frac{1}{2}$ "	3.45

## EXCELSIOR ACID SYPHON.

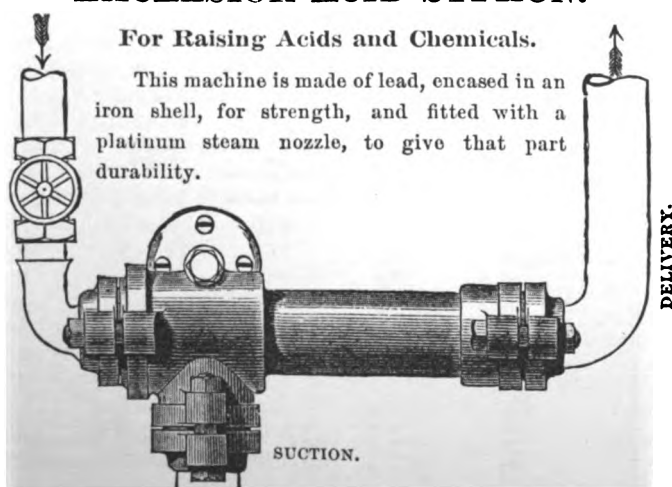


Fig. 143.

This machine is made of lead, encased in an iron shell, for strength, and fitted with a platinum steam nozzle, to give that part durability.

## THE MODEL EJECTOR.

Made of Best Steam Metal.

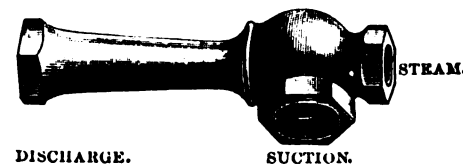


Fig. 142.

The "Model" Ejector is a very effective and economical substitute for a steam pump, and has, among many other desirable features, the following, which will be appreciated by all having use for a cheap and reliable means of moving liquids: it has no loose or moving parts; nothing to break, clog or get out of order; requires absolutely no attention or skill to run it; no oil or packing; cannot rust or freeze; requires no adjustment or repairs, and is always ready for instant use. It will be found useful in elevating and conveying water, gritty, sandy or viscid liquids of all kinds, for emptying pits, tanks, cisterns, tanners' and dyers' vats, excavations, quarries, etc.; for pumping from wells, filling locomotive tanks from ponds or streams, freeing vessels from bilge water, washing decks and floors, etc., etc. They will lift and force water fifty feet.

Capacities of Ejectors are based on a working pressure of fifty pounds steam; from higher pressure better results will be obtained.

If possible, place the Ejector so that its lift may not be over ten feet, but in no case more than twenty feet. When over ten feet a check-valve should always be used.

### Prices and Capacity Model Ejectors.

SIZE EJECTOR.....	A	B	C	D	E	F	G	H	I
Size Pipe, supply and discharge.....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	4
Size Steam Pipe .....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$
Gallons per hour.....	210	480	960	1200	1900	2900	4800	7200	10000
Price .....	\$7.50	10.00	13.00	17.00	22.00	30.00	40.00	55.00	75.00

### Prices and Capacity Excelsior Acid Syphons.

Size.	Gallons per hour.	Suction and Delivery Pipe.	Steam Pipe	Price.
No. 0	150	$\frac{1}{2}$ in.	$\frac{1}{2}$ in.	\$22.00
" 1	300	1 "	$\frac{3}{4}$ "	28.00
" 2	600	$1\frac{1}{4}$ "	1 "	35.00
" 3	1000	$1\frac{1}{2}$ "	$1\frac{1}{4}$ "	46.00
" 4	1500	2 "	$1\frac{1}{2}$ "	58.00
" 5	2250	2 "	$1\frac{3}{4}$ "	74.00
" 6	3000	$2\frac{1}{2}$ "	2 "	90.00
" 7	7000	3 "	2 "	120.00

**CISTERN AND WELL PUMP.**  
Anti-freezing, with Wrought Iron Extension.

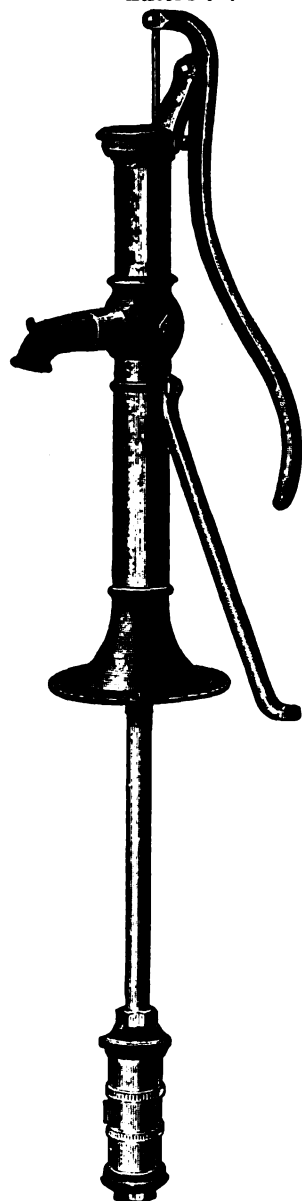


Fig. 144.

**PITCHER SPOUT CISTERN PUMP.**

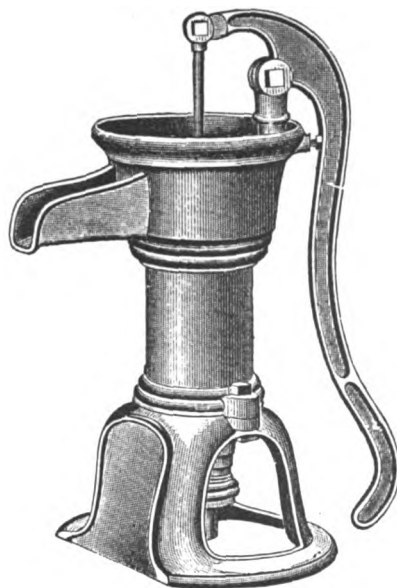


Fig. 145.

Prices Fig. 145.

2 1/2 inch cylinder, for 1 or 1 1/4 inch pipe.....	\$4.25
3 " " " 1 1/4 " 1 1/2 " .....	4.75
3 1/2 " " " 1 1/4 " 1 1/2 " .....	5.25
4 " " " 1 1/4 " 1 1/2 " .....	5.75
4 1/2 " " " 1 1/2 " 2 " .....	6.25

**REVOLVING TOP CISTERN PUMP.**

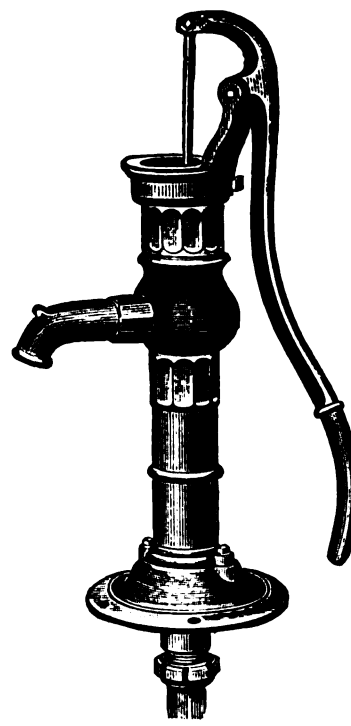


Fig. 146.

Prices Fig. 146.

	Iron.	Brass Cyl.
2 inch cylinder, for 1 inch pipe.....	\$3.50	\$5.50
2 1/4 " " " 1 " " .....	4.00	6.00
2 3/8 " " " 1 or 1 1/4 " .....	4.50	7.00
2 1/2 " " " 1 1/4 " " .....	5.00	8.00
3 " " " 1 1/4 or 1 1/2 " .....	5.50	10.00
3 1/4 " " " 1 1/2 " " .....	6.50	14.00
3 1/2 " " " 1 1/2 or 2 " .....	8.00	18.00
4 " " " 2 or 2 1/2 " .....	12.00	20.00

**DRIVE WELL PUMP, WITH BRACE.**  
Anti-freezing. Brass Valve Seat.

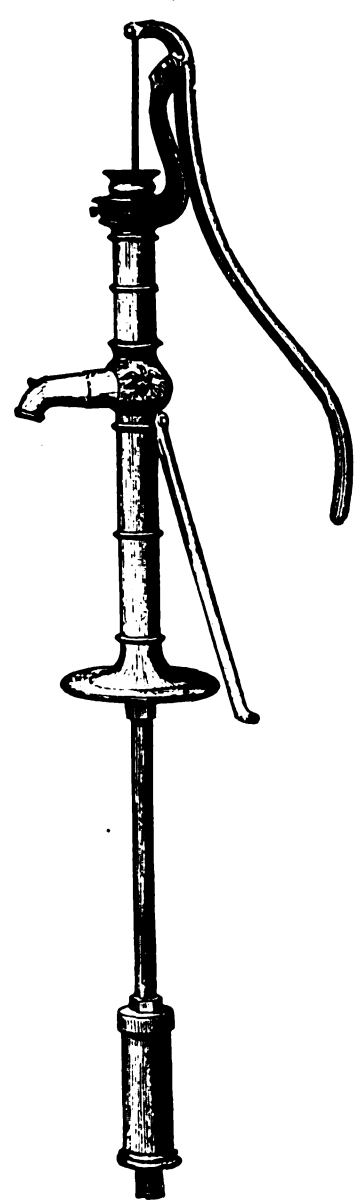


Fig. 147.

Prices Fig. 147.

2 1/2 inch cylinder, for 1 inch pipe.....	\$7.75
2 3/4 " " " 1 1/4 " " .....	8.00
3 " " " 1 1/4 " " .....	8.50
3 1/4 " " " 1 1/4 or 1 1/2 " .....	9.00

2 1/2 inch cylinder, for 1 inch pipe.....	\$8.25
2 3/4 " " " 1 " " .....	8.75
3 " " " 1 " " .....	9.00

**DRIVE WELL FILTER POINTS.**



Fig. 148.

Sizes.	50 Gauge.	90 Gauge.
1 1/4 inches, 24 inches long, 80 holes..... each	\$4.00	\$5.50
1 1/2 " 30 " " 100 " .....	4.75	7.25
2 " 30 " " 200 " .....	7.00	11.25

Larger sizes made to order.

**PATENT IMPROVED SAND AND CLAY AUGERS.**



Fig. 149.

Sizes.	Clay Auger.	Sand Auger.
2 1/2 inch, to couple on 1 1/4 inch pipe..... each	\$6.00	\$7.50
3 " " " 1 1/4 " " .....	6.75	8.50
4 " " " 1 1/4 " " .....	10.50	13.25
6 " " " 1 1/2 to 2 " .....	25.00	30.00

**GAS SET CYLINDER.**  
Outside Attachments.

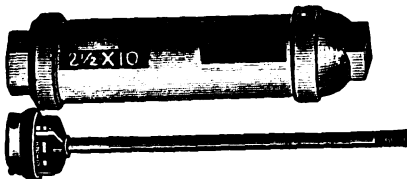


Fig. 150.

Fig. 150.—IRON CYLINDERS.		BRASS BODY CYLINDERS.	
2 x 9 .. ea. \$3.75	2 1/2 x 10 .. ea. \$4.35	2 x 10 .. ea. \$0.75	
2 1/4 x 9 .. " 4.00	2 3/4 x 10 .. " 4.70	2 1/4 x 10 .. " 7.25	
2 1/2 x 9 .. " 4.35	3 x 10 .. " 5.00	2 3/4 x 10 .. " 7.75	
2 3/4 x 9 .. " 4.70	3 1/4 x 10 .. " 5.30	2 1/2 x 10 .. " 8.25	
3 x 9 .. " 5.00	3 1/2 x 10 .. " 5.60	3 x 10 .. " 8.75	
3 1/4 x 9 .. " 5.30	4 x 10 .. " 6.25	3 1/4 x 10 .. " 9.25	
2 1/2 x 10 .. " 4.00	4 1/2 x 10 .. " 6.75	3 1/2 x 10 .. " 9.75	
		4 x 10 .. " 10.25	

**BOLT CYLINDER.**

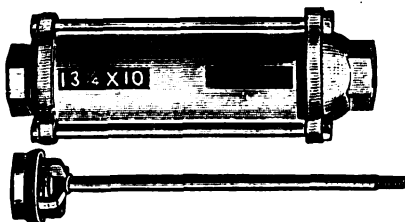


Fig. 151.

Fig. 151.—IRON CYL'S.	
2 1/2 x 10 .. ea. \$4.35	
2 3/4 x 10 .. " 4.70	
3 x 10 .. " 5.00	
BRASS BODY CYLINDERS.	
2 1/2 x 10 .. ea. \$7.75	
2 3/4 x 10 .. " 8.25	
3 x 10 .. " 8.75	

**SHALLOW WELL CYLINDER.**  
Outside Attachments.

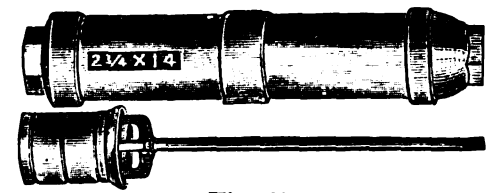


Fig. 152.

Fig. 152.—IRON CYLINDERS.		BRASS BODY CYLINDERS.	
2 1/2 x 12 .. ea. \$5.50	2 1/4 x 14 .. ea. \$6.00	2 x 12 .. ea. \$7.50	2 x 14 .. ea. \$8.25
2 1/4 x 12 .. " 6.00	2 1/2 x 14 .. " 6.50	2 1/4 x 12 .. " 8.00	2 1/4 x 14 .. " 8.75
2 3/4 x 12 .. " 6.50	2 3/4 x 14 .. " 7.00	2 1/2 x 12 .. " 8.50	2 1/2 x 14 .. " 9.25
3 x 12 .. " 7.00	3 x 14 .. " 7.50	2 3/4 x 12 .. " 9.00	2 3/4 x 14 .. " 9.75
3 1/4 x 12 .. " 7.50	3 1/4 x 14 .. " 8.00	3 x 12 .. " 9.50	3 x 14 .. " 10.25
3 1/2 x 12 .. " 8.00	3 1/2 x 14 .. " 8.50	3 1/4 x 12 .. " 10.00	3 1/4 x 14 .. " 10.75
4 x 12 .. " 9.00	4 x 14 .. " 10.00	3 1/2 x 12 .. " 10.50	3 1/2 x 14 .. " 11.25
4 1/2 x 12 .. " 10.00	4 1/2 x 14 .. " 12.50	4 x 12 .. " 12.50	4 x 14 .. " 14.00

### DEEP WELL CYLINDER. Outside Attachment.

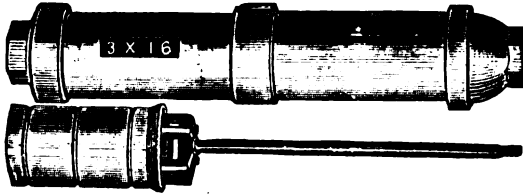


Fig. 153.

Fig. 153.—IRON CYLINDERS.

2 x 16..ea. \$6.00	2 1/4 x 18..ea. \$7.00
2 1/4 x 16.. " 6.50	2 1/2 x 18.. " 7.50
2 1/2 x 16.. " 7.00	2 3/4 x 18.. " 8.00
2 3/4 x 16.. " 7.50	3 x 18.. " 8.50
3 x 16.. " 8.00	3 1/4 x 18.. " 9.00
3 1/4 x 16.. " 8.50	3 1/2 x 18.. " 9.50
3 1/2 x 16.. " 9.00	4 x 18.. " 10.50
4 x 16.. " 10.00	4 1/2 x 18.. " 13.50
4 1/2 x 16.. " 13.00	5 1/2 x 18.. " 20.00

BRASS BODY CYLINDERS.

2 x 16..ea. \$9.00	2 x 18..ea. \$9.75
2 1/4 x 16.. " 9.50	2 1/4 x 18.. " 10.25
2 1/2 x 16.. " 10.00	2 1/2 x 18.. " 10.75
2 3/4 x 16.. " 10.50	2 3/4 x 18.. " 11.25
3 x 16.. " 11.00	3 x 18.. " 11.75
3 1/4 x 16.. " 11.50	3 1/4 x 18.. " 12.25
3 1/2 x 16.. " 12.00	3 1/2 x 18.. " 12.75
4 x 16.. " 15.75	4 x 18.. " 16.50

### DEEP WELL CYLINDER. Inside Attachment.

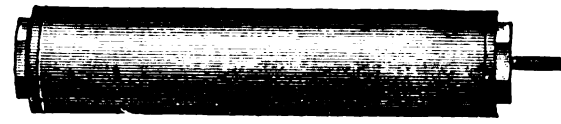


Fig. 154.

Fig. 154.—IRON CYLINDERS.

2 1/4 x 12..ea. \$5.50	2 1/4 x 14..ea. \$6.00
2 1/2 x 12.. " 6.00	2 1/2 x 14.. " 6.50
2 3/4 x 12.. " 6.50	2 3/4 x 14.. " 7.00
3 x 12.. " 7.00	3 x 14.. " 7.50
3 1/4 x 12.. " 7.50	3 1/4 x 14.. " 8.00
3 1/2 x 12.. " 8.00	3 1/2 x 14.. " 8.50
4 x 12.. " 9.00	4 x 14.. " 10.00
4 1/2 x 12.. " 10.00	4 1/2 x 14.. " 12.50

BRASS BODY CYLINDERS.

2 x 12..ea. \$7.50	2 x 14..ea. \$8.25
2 1/4 x 12.. " 8.00	2 1/4 x 14.. " 8.75
2 1/2 x 12.. " 8.50	2 1/2 x 14.. " 9.25
2 3/4 x 12.. " 9.00	2 3/4 x 14.. " 9.75
3 x 12.. " 9.50	3 x 14.. " 10.25
3 1/4 x 12.. " 10.00	3 1/4 x 14.. " 10.75
3 1/2 x 12.. " 10.50	3 1/2 x 14.. " 11.25
4 x 12.. " 12.50	4 x 14.. " 14.00

### BRASS AIR PUMP.

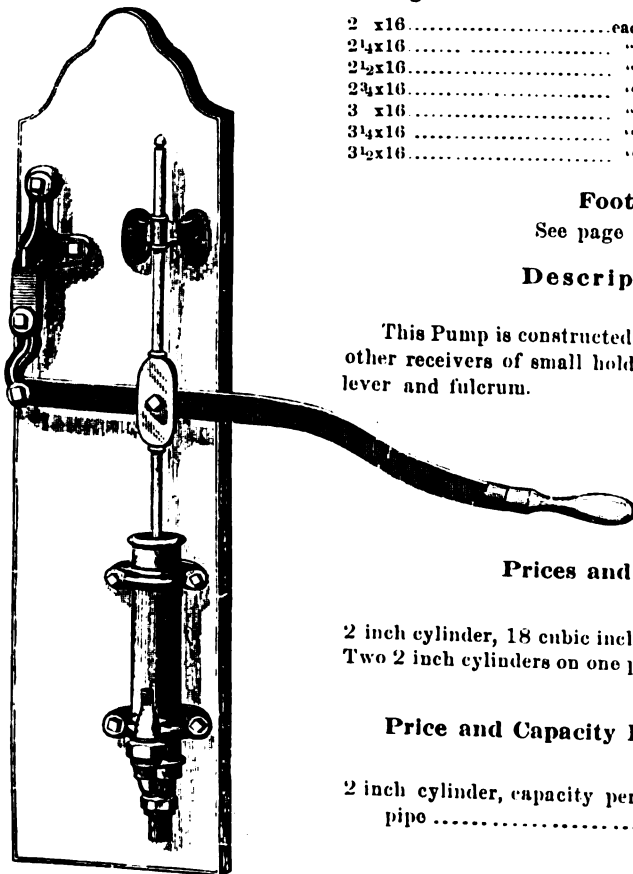


Fig. 155.

Fig. 154.—IRON CYLINDERS.

2 x 16.....each \$6.00
2 1/4 x 16..... " 6.50
2 1/2 x 16..... " 7.00
2 3/4 x 16..... " 7.50
3 x 16..... " 8.00
3 1/4 x 16..... " 8.50
3 1/2 x 16..... " 9.00

BRASS BODY CYLINDERS.

2 x 16.....each \$9.00
2 1/4 x 16..... " 9.50
2 1/2 x 16..... " 10.00
2 3/4 x 16..... " 10.50
3 x 16..... " 11.00
3 1/4 x 16..... " 11.50
3 1/2 x 16..... " 12.00

### Foot Valves and Strainers.

See page 57 and 58 for Prices and Cuts.

### Description Brass Air Pump.

Fig. 155.

This Pump is constructed for forcing air or any gas into barrels, casks, or other receivers of small holding capacity. Made entirely of brass, except the lever and fulcrum.

### Prices and Capacity Brass Air Pumps.

Fig. 155.

2 inch cylinder, 18 cubic inches per stroke.....each	\$15.00
Two 2 inch cylinders on one plank, 36 cubic inches per stroke....	35.00

### Price and Capacity Plumbers' Hydraulic Pressure Pump.

Fig. 156.

2 inch cylinder, capacity per stroke $\frac{1}{4}$ gallon, fitted for hose or iron pipe.....each	\$20.00
--	---------

### PLUMBERS' HYDRAULIC PRESSURE PUMP.

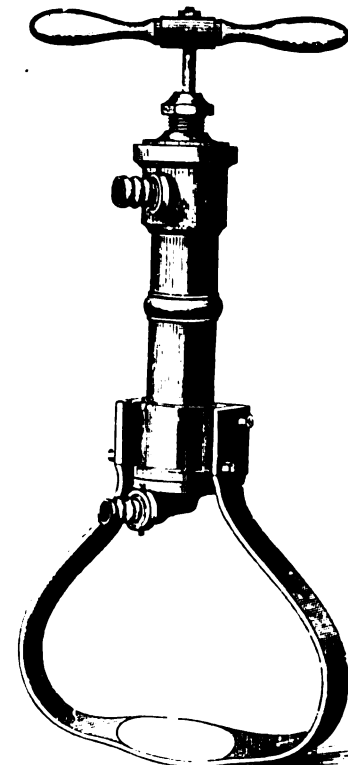


Fig. 156.

### HYDRAULIC PRESSURE PUMP. For Testing Steam Boilers, Pipes, etc.

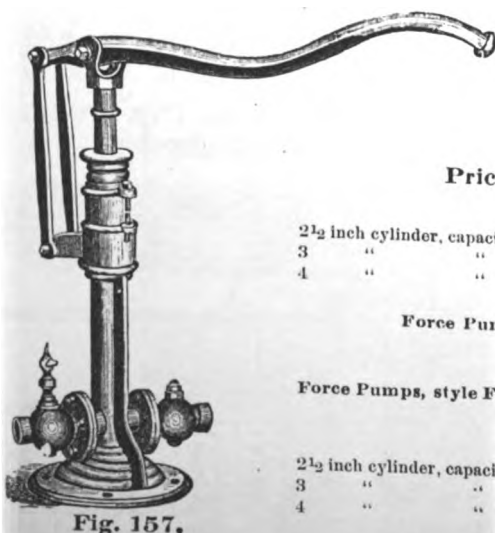


Fig. 157.

### Prices and Capacity Hydraulic Pressure Pump.

Fig. 157.

1 1/4 inch piston, 1 inch suction and 3/8 inch discharge pipe.....each	\$25.00
--	---------

### Prices and Capacity Force Pumps.

Fig. 158.

		Iron Cylinder.	Brass Cylinder.
2 1/2 inch cylinder, capacity per stroke $\frac{1}{8}$ gallon, for 1 1/4 inch pipe ..		\$12.50	\$17.50
3 " " " " " 1-6 " " 1 1/4 or 1 1/2 in. pipe, 14.50			18.50
4 " " " " " 2-5 " " 1 1/2 or 2 in. " 23.50			34.50

Force Pumps, style Fig. 158, but mounted on plank.  
Same sizes and prices as above.

Force Pumps, style Fig. 158, with top outlet but no cock. Mounted either on base or on plank.

### PRICES AND CAPACITY.

		Iron Cylinder.	Brass Cylinder.
2 1/2 inch cylinder, capacity per stroke $\frac{1}{8}$ gallon, for 1 1/4 inch pipe....		\$10.00	\$15.00
3 " " " " " 1-6 " " 1 1/4 or 1 1/2 in. pipe, 12.00			16.00
4 " " " " " 2-5 " " 1 1/2 or 2 in. " 21.00			30.00

### FORCE PUMP ON BASE. Air-Chamber with Two Outlets. Cock on Side Outlet.



Fig. 158.



# WIND MILL FORCE PUMPS.

For Hand and Wind Mill.

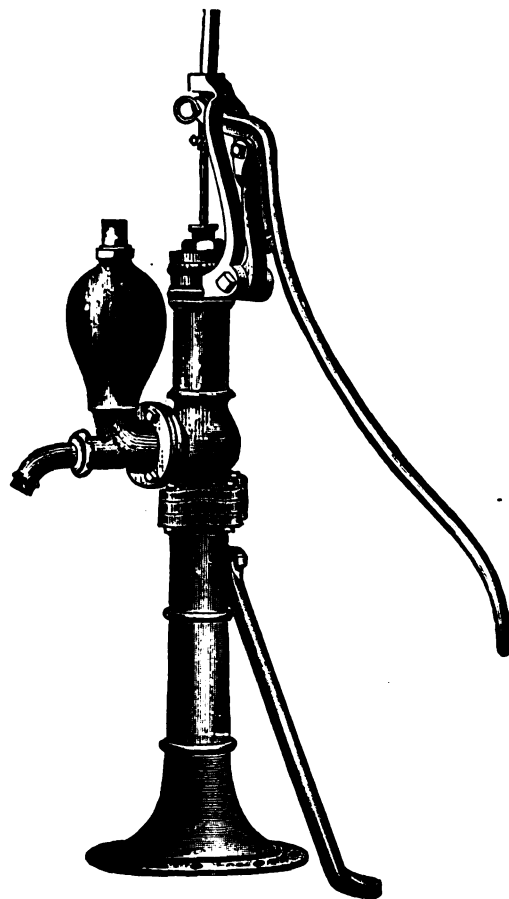


Fig. 159.

Prices, Wind Mill Force Pumps.

Fig. 159.

6-inch Stroke complete, as per cut.....	each,	\$13.50
10 " " " " " " " " " " " " " " " "	"	15.00
Extra Flanges for 1 1/4 inch.....	"	0.50
" " " " " " " " " " " " " " " "	"	0.60

Prices, Wind Mill Force Pumps, with Cock.

WITH REVOLVING BRAKE AND BRASS PISTON ROD.

Fig. 160.

Diameter of Cylinder.	Capacity per stroke.	Size for Pipe.	Iron, each.	Brass Cyl., each.
2 1/2 in.	1/2 gal.	1 1/4 in.	\$13.50	\$19.00
3 " "	" "	1 1/4 or 1 1/2 in.	15.50	20.50
4 " "	" "	1 1/2 or 2 " "	24.00	37.00

Wind Mill Force Pumps, style of Fig. 160, but on base, same sizes and prices as above. When arranged with forked rod instead of the lever and braces, to connect to wood rod of Wind Mill, no extra charge.

For Hand and Wind Mill.

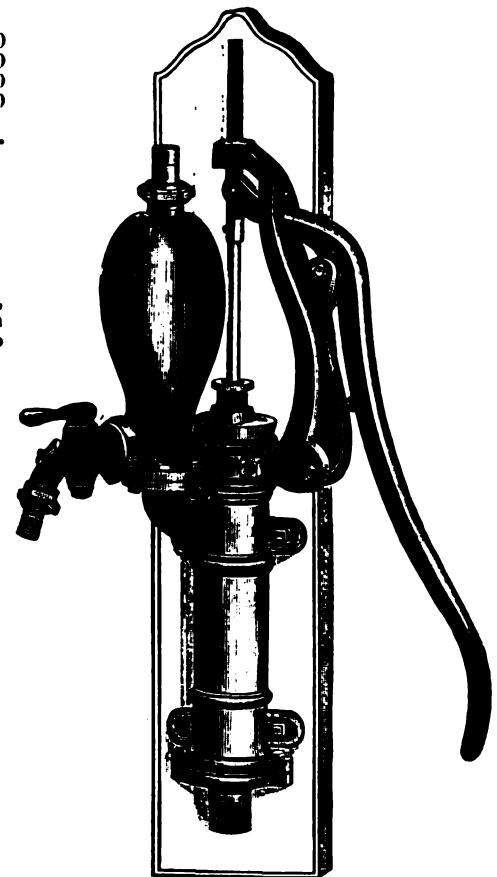


Fig. 160.



"TOM THUMB."

Forked Rod,

FOR WIND MILL.

Fig. 162.

Each, \$3.00

For Wind Mill or Machine Power.

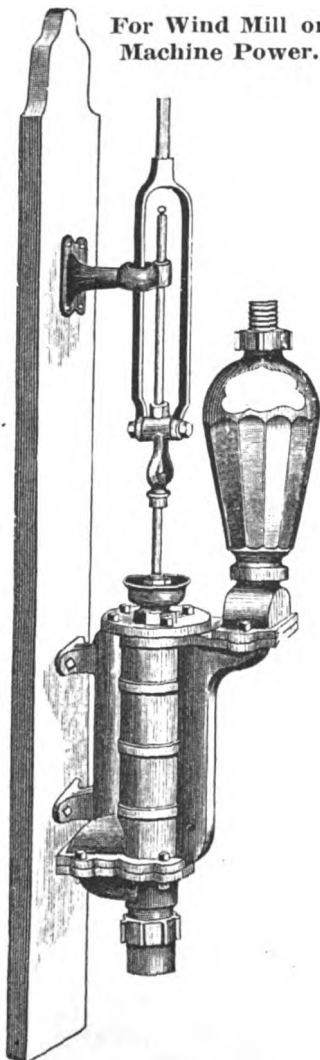


Fig. 164.

The suction orifice of this pump being situated at or near the top of the working cylinder, the valves are always submerged in from five to ten inches of water, keeping the pump primed at all times. The inner cylinder is of brass with brass valve-seat, making it non-corrosive; the outer cylinder is of iron; the rod is cased with brass, and works through a brass stuffing-gland.

Prices "Tom Thumb" Wind Mill Force Pumps.

Figs. 161 and 163.

Diameter of Cylinder.	Length of Stroke.	Capacity per Stroke.	Size of Pipe.	Price, each.
2 inch.	7 inch.	1/2 gal.	1 inch.	\$21.50
2 1/2 " "	7 " "	" "	1 1/4 " "	23.00
3 " "	7 " "	" "	1 1/2 " "	25.25
3 1/2 " "	7 " "	" "	1 1/2 " "	27.25
4 " "	7 " "	" "	2 " "	30.50
4 1/2 " "	7 " "	" "	2 " "	37.50
5 " "	10 " "	" "	2 1/2 " "	44.00
5 1/2 " "	10 " "	" "	2 1/2 " "	47.00
6 " "	10 " "	1 1/2 " "	3 " "	50.00

Prices Double-Acting Railroad Force Pumps.

Fig. 164.

Diameter of Cylinder.	Length of Stroke.	Capacity per Stroke.	No. of Strokes per minute.	Size of Pipe.	Iron, each.	Brass Cyl., each.
2 inch.	8 inch.	1/2 gallon.	80	1 inch.	\$17.50	\$30.00
2 1/2 " "	8 " "	" "	75	1 1/4 " "	21.00	39.00
3 " "	8 " "	" "	70	1 1/2 " "	25.00	52.00
3 1/2 " "	8 " "	" "	60	2 " "	30.00	74.00
4 " "	8 " "	" "	50	2 " "	44.00	99.00
4 1/2 " "	8 " "	" "	50	2 " "	58.00	142.00
5 " "	8 " "	1 1/2 " "	40	2 1/2 " "	80.00	170.00
6 " "	8 " "	2 " "	40	3 " "	100.00	200.00

Prices Double-Acting Pacific Railroad Force Pumps.

Fig. 165.

Diameter of Cylinder.	Length of Stroke.	Capacity per Stroke.	Size of Pipe.	Iron, each.	Brass Lined Cyl., each.
3 inch.	8 inch.	1/2 gallon.	1 1/2 inch.	\$65.00	\$75.00
3 " "	10 " "	" "	1 1/2 " "	70.00	78.00
3 " "	12 " "	" "	1 1/2 " "	72.00	80.00
4 " "	8 " "	" "	2 " "	75.00	79.50
4 " "	10 " "	1 1/4 " "	2 " "	95.00	101.00
4 " "	12 " "	1 1/4 " "	2 " "	100.00	111.00
4 " "	14 " "	1 1/4 " "	2 " "	110.00	125.00
5 " "	8 " "	1 1/4 " "	2 1/2 " "	90.00	110.00
5 " "	12 " "	2 1/2 " "	2 1/2 " "	110.00	118.00
5 " "	14 " "	2 1/2 " "	2 1/2 " "	130.00	165.00
6 " "	8 " "	2 " "	3 " "	110.00	135.00
6 " "	14 " "	3 1/2 " "	3 " "	175.00	215.00
8 " "	10 " "	4 1/4 " "	4 " "	275.00	325.00

For Wind Mill or Machine Power.

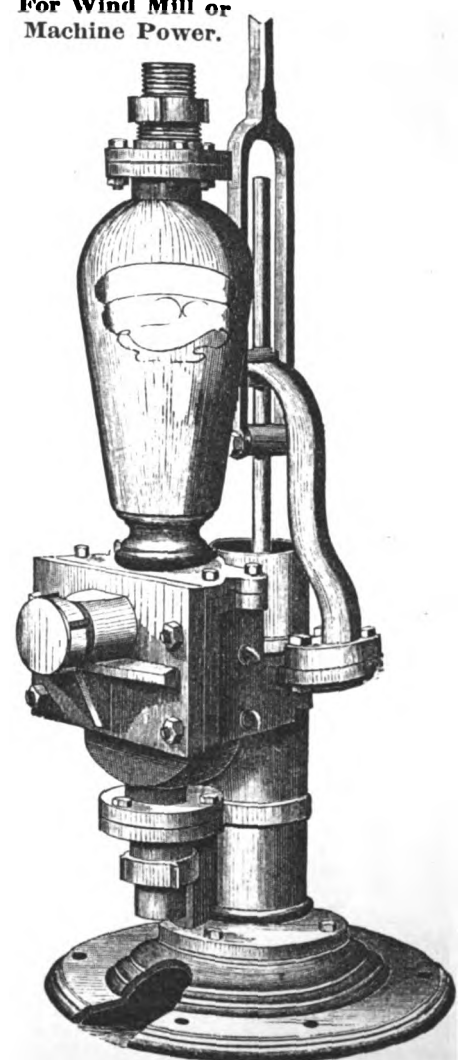


Fig. 165.

**RAILROAD FORCE PUMP.**

Mounted on Plank. For Machine Power.

**Prices.**

Fig. 166.

5 in. Cylinder, capacity per stroke  $\frac{1}{4}$  gallon, for 2 or 2 $\frac{1}{2}$  in. pipes—

Iron, each.	Brass Cyl., each.
\$45.00	\$126.00

Fitted with Metallic Valves and Plunger for pumping hot liquids, add to list..\$10.00

Length of stroke 10 inches, can be run from 40 to 60 strokes per minute.

**RAILROAD FORCE PUMP.**

MOUNTED ON PLANK,

Style of Fig. 166, but rigged for hand use.

5 in. Cylinder, capacity per stroke  $\frac{1}{4}$  gallon, for 2 or 2 $\frac{1}{2}$  in. pipes—

Iron, each.	Brass Cyl., each.
\$45.00	\$126.00

Fitted with Metallic Valves and Plunger for pumping hot liquids, add to list..\$10.00

Length of stroke 10 inches.

**BRASS DOUBLE-CYLINDER FORCE PUMP.**

For House or Ship Use.

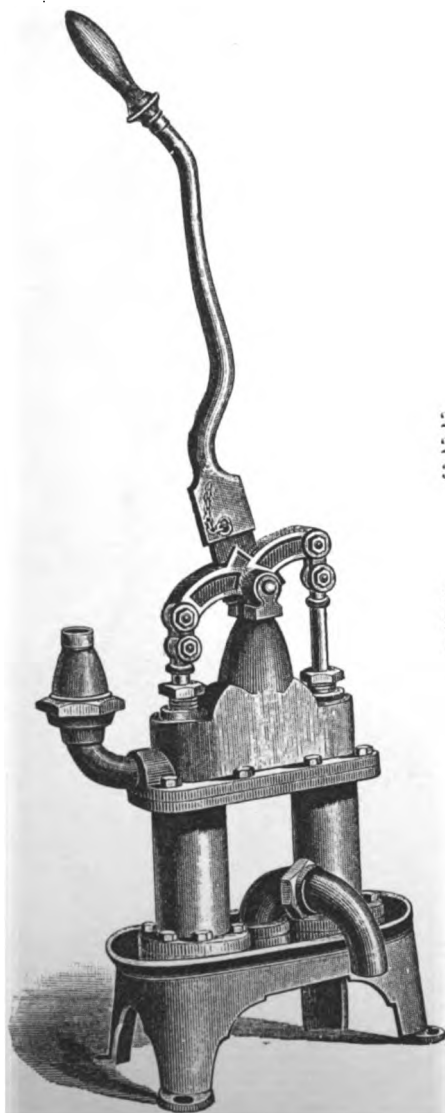


Fig. 168.

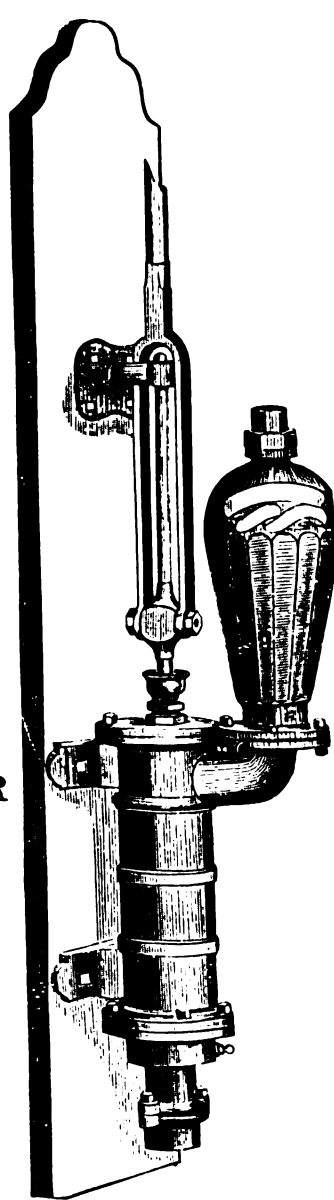


Fig. 166.

**Prices, Brass Double-cylinder Force Pumps.**

Fig. 168.

2 in. Cyls., cap'y per stroke $\frac{1}{4}$ gal., for 1 in. pipe, each,	\$25.00
2 $\frac{1}{2}$ " " " " $\frac{1}{4}$ " " 1 $\frac{1}{4}$ " " "	35.00
3 " " " " $\frac{1}{4}$ " " 1 $\frac{1}{2}$ " " "	60.00

**Prices, Iron Column Force Pumps.**

Fig. 169.

	Iron, each.	Brass Cyl., each.
2 in. Cyl., cap'y per stroke $\frac{1}{4}$ gal., for 1 in. pipe,	\$70.00	\$86.00
2 $\frac{1}{2}$ " " " " $\frac{1}{4}$ " " 1 $\frac{1}{4}$ " " "	75.00	89.00
3 " " " " $\frac{1}{4}$ " " 1 $\frac{1}{2}$ " " "	85.00	106.00
3 $\frac{1}{2}$ " " " " $\frac{1}{4}$ " " 2 " " "	100.00	144.00
4 " " " " $\frac{1}{4}$ " " 2 " " "	120.00	172.00
4 $\frac{1}{2}$ " " " " 1 " " 2 " " "	140.00	224.00

I can furnish Iron Column, as shown in Fig. 169, rigged with two Pumps—i. e., one Double-acting Force Pump and one Boiler Pump.

**Prices, Force and Boiler Pumps on same Column.**

	Iron, each.
2 $\frac{1}{2}$ in. Force Pump and 2 in. Boiler Pumps for 20 H. P.	\$100.00
3 " " " 2 $\frac{1}{2}$ " " " " "	130.00
3 $\frac{1}{2}$ " " " 2 $\frac{1}{2}$ " " " " "	135.00
4 " " " 3 " " " " "	165.00
4 $\frac{1}{2}$ " " " 4 " " " " "	180.00

This is a complete combination of the Tank and Boiler Feed Pump. Both Pumps can be worked at the same time, or either disconnected at will.

**RAILROAD FORCE PUMP.**

With Tight and Loose Pulleys.

Mounted on Plank.  
For Power.

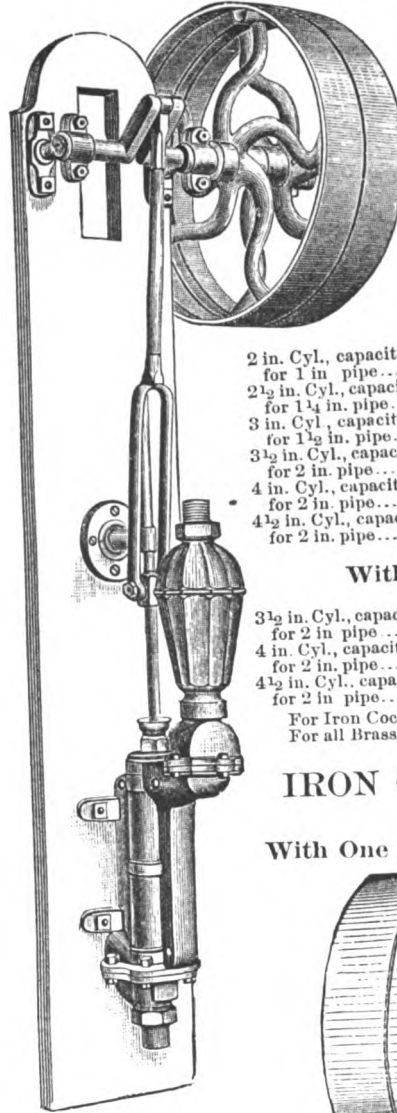


Fig. 167.

**Prices.**

Fig. 167.

	Iron, each.	Brass Cyl., each.
2 in. Cyl., capacity per stroke 1-5 gal., for 1 in. pipe.....	\$39.00	\$51.00
2 $\frac{1}{2}$ in. Cyl., capacity per stroke 1-3 gal., for 1 $\frac{1}{4}$ in. pipe.....	41.00	56.00
3 in. Cyl., capacity per stroke 1-2 gal., for 1 $\frac{1}{2}$ in. pipe.....	45.00	62.00
3 $\frac{1}{2}$ in. Cyl., capacity per stroke 6-7 gal., for 2 in. pipe.....	51.00	81.00
4 in. Cyl., capacity per stroke 7-8 gal., for 2 in. pipe.....	63.00	114.00
4 $\frac{1}{2}$ in. Cyl., capacity per stroke 1 gal., for 2 in. pipe.....	80.00	155.00

**With Gun Metal Valves.**

	Iron, each.	Brass Cyl., each.
3 $\frac{1}{2}$ in. Cyl., capacity per stroke 6-7 gal., for 2 in. pipe.....	\$61.00	\$90.00
4 in. Cyl., capacity per stroke 7-8 gal., for 2 in. pipe.....	73.00	124.00
4 $\frac{1}{2}$ in. Cyl., capacity per stroke 1 gal., for 2 in. pipe.....	90.00	165.00
For Iron Cock with Brass Plug, add \$2.50 to list.		
For all Brass Cock, add \$5.00 to list.		

**IRON COLUMN FORCE PUMP.**

With One Double-acting Force Pump.

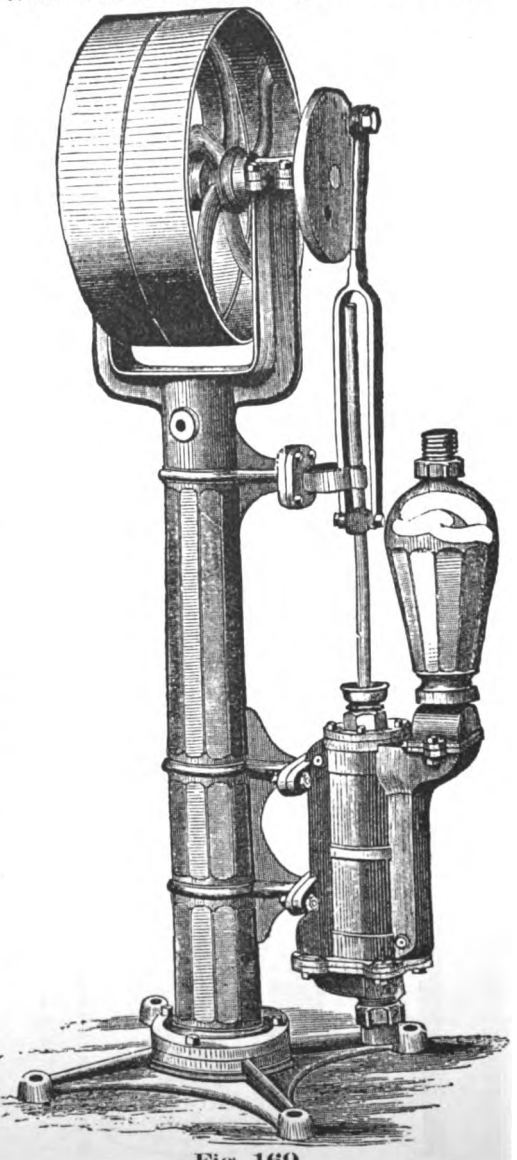


Fig. 169.



# HORIZONTAL DOUBLE ACTING FORCE PUMPS.

For Hand Use.

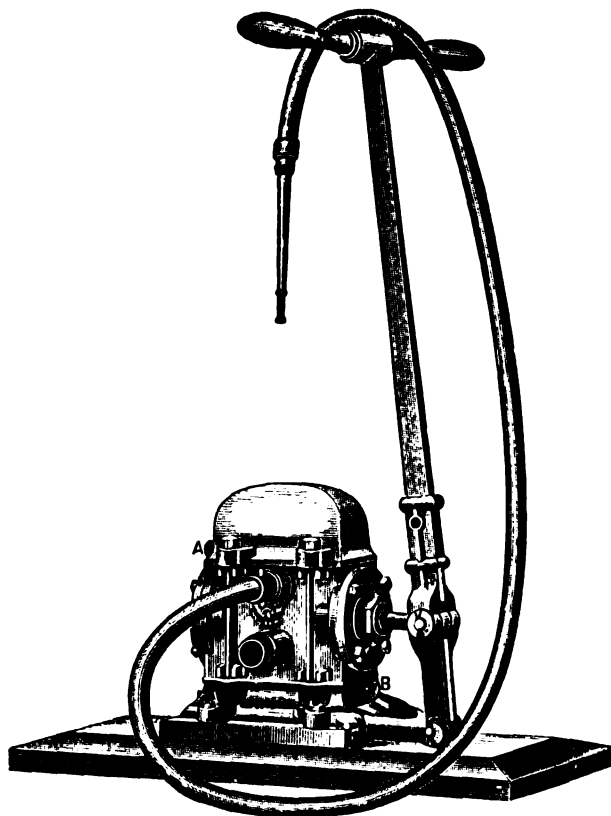


Fig. 170.

					Iron.	Brass Cyl.
3 in. cyl., cap'y per stroke 3-10 gal., for 1 1/4 in. pipe....	each				\$28.00	\$58.00
4 " " " 1-2 " 1 1/2 " " " "	"				32.00	60.00
5 " " " 6-7 " 2 " " " "	"				35.00	90.00
6 " " " 1 1-5 " 2 1/2 " " " "	"				45.00	120.00

**IMPROVED CLOSE TOP  
TWO CYLINDER FORCE PUMP.**  
For Steamboats, Factories, Railroads, etc.

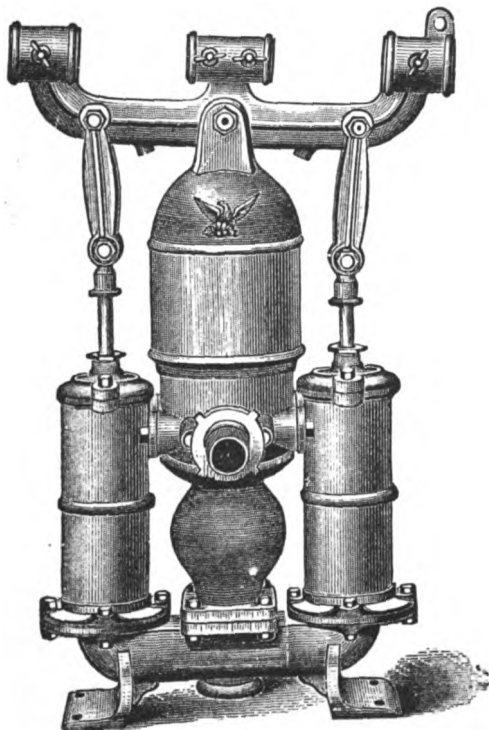


Fig. 172.

Diam of Cylinder.	Capacity per Stroke.	Size of Pipe.	Size of Hose.	Iron. Each.	Brass Cyl. Each.
2 1/2 in.	1-4 gal.	1 1/4 in.	1 1/4 in.	\$35.00	\$50.00
3 " "	3-8 " "	1 1/2 " "	1 1/4 " "	40.00	60.00
4 " "	5-7 " "	2 " "	1 1/2 " "	55.00	80.00
5 " "	1 1-8 " "	2 1/2 " "	2 " "	70.00	95.00
6 " "	1 3-4 " "	3 " "	2 " "	100.00	155.00
Iron Folding Brakes, extra .....				20 00	

The cylinders are lined with Copper; the piston rod, valves and seats are made of bronze. All parts of this pump exposed to the action of water are non-corrosive. It is compact, strong, simple, durable, and unequaled by any pump of the kind in use. It is especially valuable on board ships, for washing decks, wetting sails or extinguishing fires; and equally invaluable on wharves or around factories, mills, warehouses, livery stables, lumber yards, etc., for a fire pump and other purposes.

All appurtenances for fitting (an iron wrench, fitting all nuts, stuffing gland and hose coupling) go complete with each Pump.

Arranged for hose, or lead or iron pipe connections.

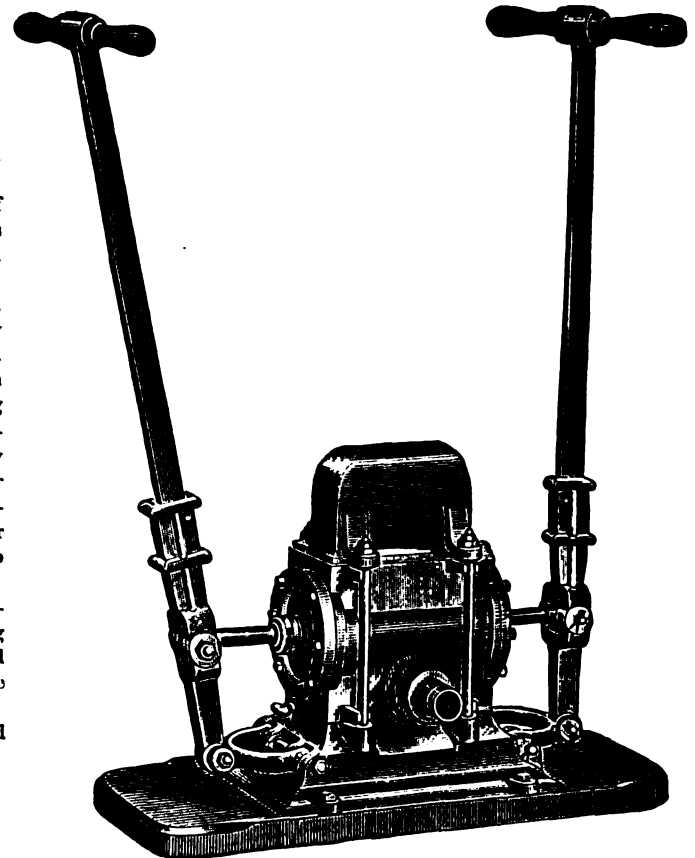


Fig. 171.

					Iron.	Brass Cyl.
5 in. cyl., cap'y per stroke 6-7 gal., for 2 in. pipe....	each				\$45.00	\$95.00
6 " " " 1 1-5 " 2 1/2 " " " "	"				55.00	125 00
Four feet hose and discharge pipe, extra .....						8.00

**SHIP'S MAIN AND BILGE PUMP.**  
With Wood Levers.

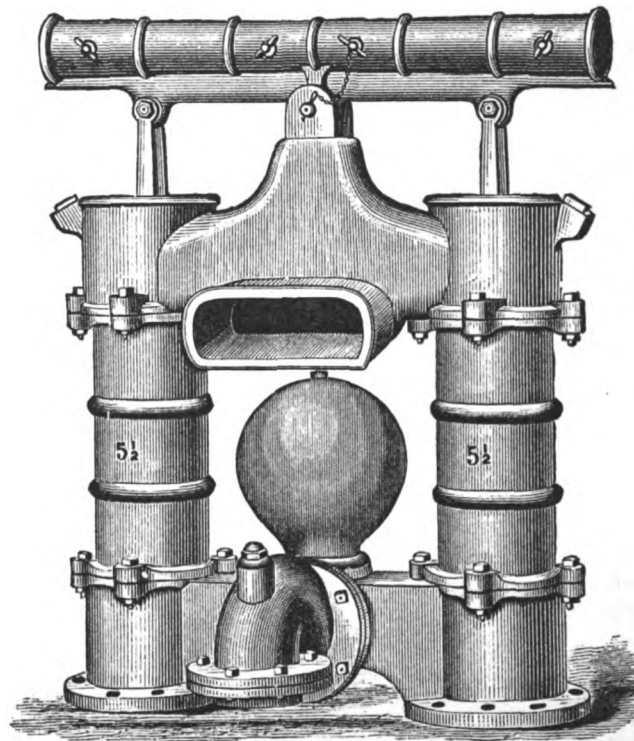


Fig. 173.

Diam of Cylinder.	Length of Stroke.	Capacity per Stroke.	Size of Pipe.	Iron Each.	Cop.-lin'd Cyl. Each.
5 in.	8 in.	1 1-3 gal.	3 in.	\$55.00	\$75.00
5 1/2 " "	8 " "	1 5-8 " "	3 " "	60 00	80.00
6 " "	8 " "	2 " "	3 " "	70.00	90.00
7 " "	8 " "	2 2-3 " "	4 " "	100.00	125.00
8 " "	8 " "	3 1-2 " "	4 " "	130.00	160.00
Iron Brakes (not folding), extra.....					5.00

**SUCTION OR  
BILGE PUMP.**  
Soldered Joints.



Fig. 174.

Inside Diam.	Price per Lineal Foot.	Inside Diam.	Price per Lineal Ft.
1 1/2 ins...	\$0 55	3 1/2 ins...	\$0.75
2 " ...	.60	4 " ...	.80
2 1/2 " ...	.65	4 1/2 " ...	.90
3 " ...	.70	5 " ...	1.20
For price of Screw Joint Pumps add net price of couplings required.			

## REVOLVING PISTON PUMPS.

## COMMON FORCE PUMP.

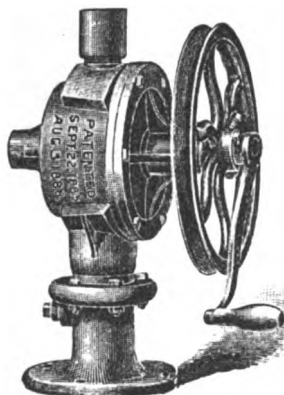


Fig. 175.

## Description Common Force Pump.

Fig. 175.

This is a most handy Pump for house and garden use. It has a practical lift of 26 feet, and is exceedingly easy to operate. Its force is excellent, and for use with a hose to water flowers, plants, vines or lawns, it cannot be surpassed. It has NO PACKING, and but one valve, which is easily accessible. It is not a non-freezing Pump, but has a check-valve in its base to allow the water to run off in freezing weather. It is operated by a crank instead of a brake, and all who have used it speak highly of this application of power. For a Sink Pump, I do not think it can be excelled. It has a capacity of about 5 gallons at 80 revolutions, which is about the number made in a minute in ordinary use. Suction pipe, 1 1/4 inch.

No. 1.—Price.....each \$7.50

## SUPPLY PUMP.

No. 6.

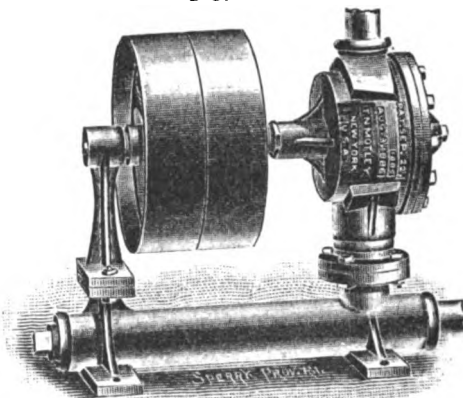


Fig. 176.

## Description Supply Pump.

Fig. 176.

This Pump will be found especially adapted for use in all places where power is used, for filling tanks or elevating water to a moderate height, such as factories, mills, stock farms, and buildings of all kinds where a moderate quantity of water is used. It has a capacity of from 10 to 15 gallons per minute, according to the speed at which it is run, which should not be less than 200 nor more than 300 revolutions, to give it its most perfect work. It has a lift of 27 feet, and will force from 75 to 100 feet. I can recommend it as an excellent fire pump for its capacity. Like all the pumps of my manufacture, it has no packing, and is so simple that it would be difficult to get it out of order, for my experience has shown me that this Pump improves with wear. It can be set up wherever needed. It has a fast and loose pulley for a belt, but should it be used with a windmill, a rope pulley is supplied. Its suction and discharge pipes are both 1 1/4 inch.

No. 6.—Price.....each \$50.00

No. 12.—Double Pump, of similar pattern to the above. Capacity, 30 gallons per minute. Price.....each \$90.00

☞ All of the parts of the above Pumps are made strictly interchangeable, so that if any part should by accident be broken, it can be replaced at small expense.

## POWER ROTARY FORCE PUMP.

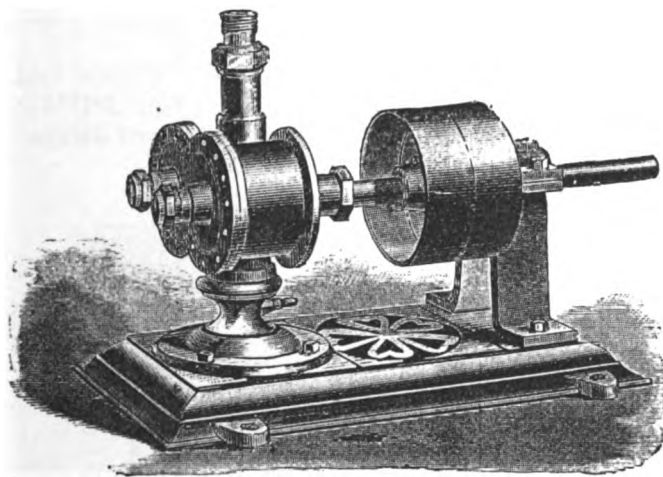


Fig. 177.

Mounted on Iron Frame, with Tight and Loose Pulleys.  
Prices and Capacity.

			Iron, each.	Bronze, each.
No. 1, capacity per revolution 1-6 gall., for 1 1/4-in. pipe,			\$26.00	\$45.00
" 2, " " " 1-5 " 1 1/2 "			31.00	55.00
" 4, " " " 1-3 " 2 "			48.00	75.00

Pulleys on Nos. 1 and 2 are 8 inches diameter and 2 1/2 inches face; on No. 4, 12 inches diameter and 3 1/2 inches face.

Balance wheels for above Pumps, \$1, \$2, and \$3, according to size.

## HAND ROTARY FORCE PUMPS.

Mounted on upright iron stand, with balance wheel. As a Lift or Force Pump, it is fully equal to any piston pump. It throws a large and constant stream with an easy and almost noiseless operation, and without the aid of an air-chamber.

## Prices and Capacity.

			Iron, Each.	Bronze, Each.
No. 1, with bal. wheel, cap'y per rev. 1-6 gall., 1 1/4-in. pipe,			\$19.00	\$40.00
" 2, " " " 1-5 " 1 1/2 "			21.00	45.00
" 4, " " " 1-3 " 2 "			35.00	64.00
Hose and Pipe suitable for Nos. 1 and 2, extra.....			3.00	
" " " " No. 4, extra.....			5.00	

## HORIZONTAL CENTRIFUGAL PUMP.

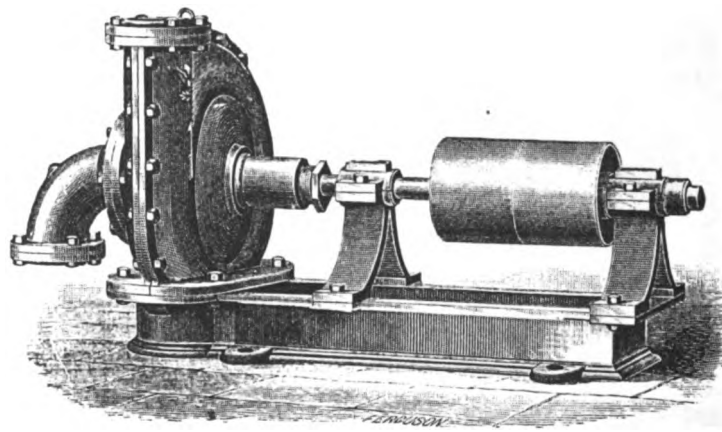


Fig. 178.

This table gives sizes of pulleys and discharge pipes; also capacity and revolutions per minute necessary to raise water to different heights.

No.	Size of Discharge Pipe.	Capacity per minute.	Diameter of Pulley.	Face of Pulley.	Revolutions per minute.										Price each.	
					6 ft.	8 ft.	10 ft.	12 ft.	15 ft.	20 ft.	25 ft.	30 ft.	Iron.	Brass.		
2	1 1/2	100	5	4	850	900	1000	1150	1600	1750	1900	2000	\$30.00	\$80.00		
3	2	350	5	4	550	600	750	850	900	1000	1150	1300	65.00	120.00		
4	2 1/2	500	6	5	450	500	550	650	800	900	1000	1100	75.00	145.00		
5	3	700	6	5	400	450	500	550	650	750	850	1000	90.00	160.00		
6	4	1000	7	7 1/2	300	350	400	450	550	650	750	900	120.00	250.00		
6 1/2	5	1800	9	8	275	325	375	425	525	650	750	850	140.00	325.00		
7	6	2500	10	8	250	300	350	400	500	650	750	850	180.00	400.00		
8	7	3000	10	9	250	300	350	400	500	650	750	850	250.00	.....		
9	8	4000	12	10	200	250	300	350	450	500	550	650	300.00	.....		

## VERTICAL CENTRIFUGAL PUMPS.

Sizes and Capacity same as Horizontal Pumps, Fig. 178.

## Prices.

Nos.	2	3	4	5	6	6 1/2	7	8	9
Iron..... each	\$24.00	55.00	65.00	70.00	105.00	130.00	150.00	200.00	240.00
Brass..... "	\$18.00	100.00	130.00	160.00	200.00	305.00	350.00	.....	.....

**STEAM BOILER FEED PUMP,  
ON COLUMN.  
With Tight and Loose Pulleys. For Hand or Power.**

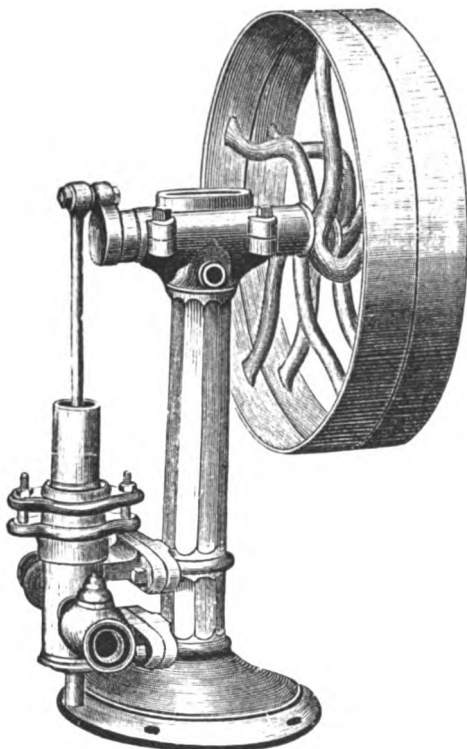


Fig. 179.

**Prices Steam Boiler Feed Pumps, on Column.**

Fig. 179.

Diam. of Cylinder.	Length of Stroke.	Capacity per Stroke.	Rev. per minute.	Size of Pipes.	Price each.
2 ins.	3 ins.	1-26 gal.	50	1 in.	\$34.00
2½ " "	3 " "	1-16 " "	50	1¼ " "	40.00
3 " "	3 " "	1-10 " "	45	1½ " "	50.00
2 " "	6 " "	1-13 " "	40	1 " "	65.00
2½ " "	6 " "	1-8 " "	40	1¼ " "	75.00
3 " "	6 " "	1-5 " "	40	1½ " "	85.00

**Prices Steam Boiler Feed Pumps, on Column.**

Style Fig. 179, but single tight pulley only.

Diam. of Cylinder.	Length of Stroke.	Capacity per Stroke.	Rev. per minute.	Size of Pipes.	Price each.
2 ins.	3 ins.	1-26 gal.	50	1 in.	\$30.00
2½ " "	3 " "	1-16 " "	50	1¼ " "	38.00
3 " "	3 " "	1-10 " "	45	1½ " "	48.00
2 " "	6 " "	1-13 " "	40	1 " "	60.00
2½ " "	6 " "	1-8 " "	40	1¼ " "	70.00
3 " "	6 " "	1-5 " "	40	1½ " "	80.00

**Prices Steam Boiler Feed Pumps, for Power.**

Fig. 180.

Diam. of Piston.	Length of Stroke.	Capacity per Stroke.	No. of Strokes per minute.	Size of Pipes.	Price each.
1¼ ins.	6 ins.	1-32 gal.	50	¾ in.	\$10.00
1½ " "	6 " "	1-23 " "	50	1 " "	15.00
2 " "	6 " "	1-13 " "	45	1 " "	22.00
2½ " "	6 " "	1-8 " "	40	1¼ " "	30.00
3 " "	6 " "	9-50 " "	40	1½ " "	40.00
4 " "	10 " "	1-2 " "	40	2 " "	60.00
5 " "	10 " "	6-7 " "	40	2½ " "	90.00

**STEAM BOILER FEED PUMP,  
FOR POWER.**

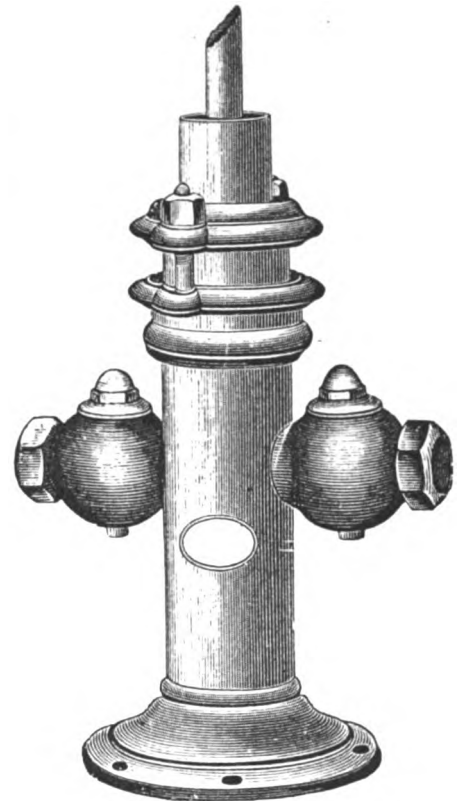


Fig. 180.

**"RIVAL" STEAM PUMP,  
For Feeding Boilers.**

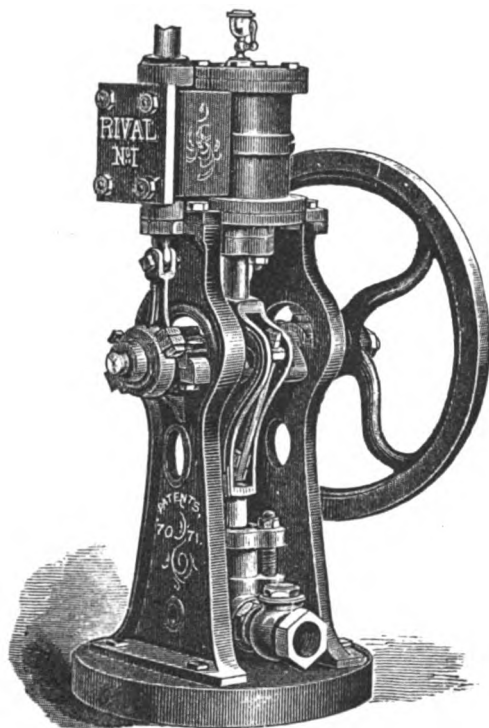


Fig. 181.

**HAND BOILER FEED PUMP,  
ON BASE.**

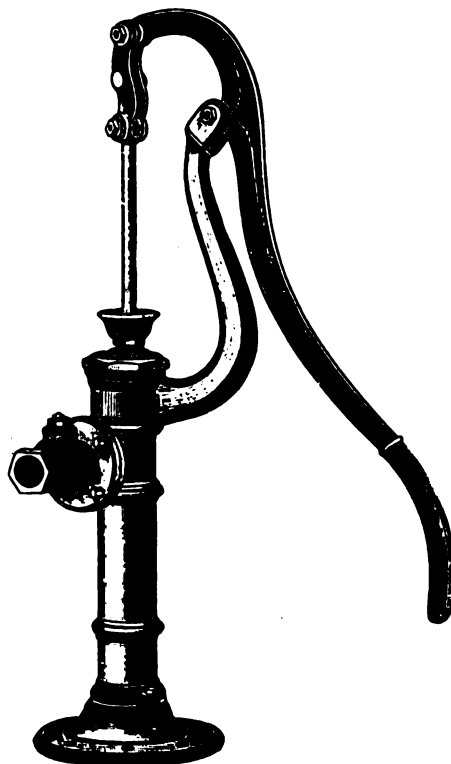


Fig. 182.

**HAND BOILER FEED PUMP,  
ON PLANK.**

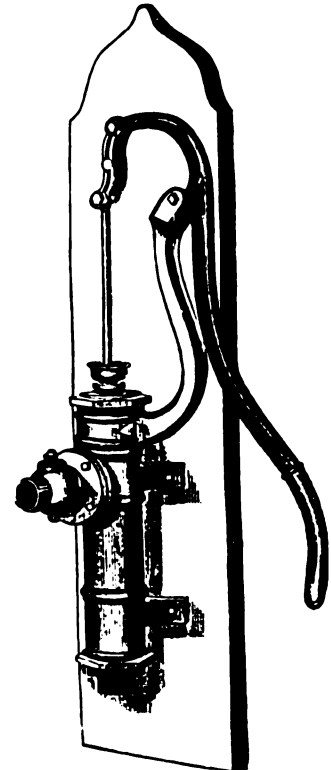


Fig. 183.

**Prices "Rival" Steam Pumps.**

Fig. 181.

No.	Diameter Steam Cylinder.	Diameter Plunger.	Length of Stroke.	Size Steam Pipe.	Size Reciprocating Pipe.	Size Water Pipe.	Revolutions per Minute.	Galls. per Minute.	Horse Power.	Price each.
50	2½ ins.	1½ ins.	2 ins.	1¼ in.	1½ in.	¾ in.	110	1.05	8.4	\$38.00
1	3 " "	1½ " "	2½ " "	1½ " "	1½ " "	1 " "	100	1.89	15.	49.00
2	3½ " "	2 " "	2½ " "	1½ " "	1½ " "	1 " "	100	3.39	27.	60.00
3	4 " "	2½ " "	3 " "	1½ " "	1½ " "	1¼ " "	90	5.72	45.9	71.00
4	4½ " "	3 " "	3 " "	1½ " "	1½ " "	1½ " "	85	7.72	62.	88.00
5	5 " "	3½ " "	4 " "	1½ " "	1½ " "	2 " "	80	13.32	106.8	108.00
6	6 " "	4 " "	5 " "	1 " "	1½ " "	2½ " "	75	20.48	163.5	160.00

**Prices Hand Boiler Feed Pumps, on Base.**

Fig. 182.

Diam. of Cylinder.	Capacity per stroke.	Size of Pipe.	Iron. Each.	Brass cyl. Each.
2 ins.	1-13 gall.	1 in.	\$12.00	\$18.00
2½ " "	1-8 " "	1¼ " "	14.00	22.00

**Prices Hand Boiler Feed Pumps, on Plank.**

Fig. 183.

Diam. of Cylinder.	Capacity per stroke.	Size of Pipe.	Iron. Each.	Brass cyl. Each.
2 ins.	1-13 gall.	1 in.	\$12.00	\$18.00
2½ " "	1-8 " "	1¼ " "	14.00	22.00

## IMPROVED HYDRAULIC RAM.

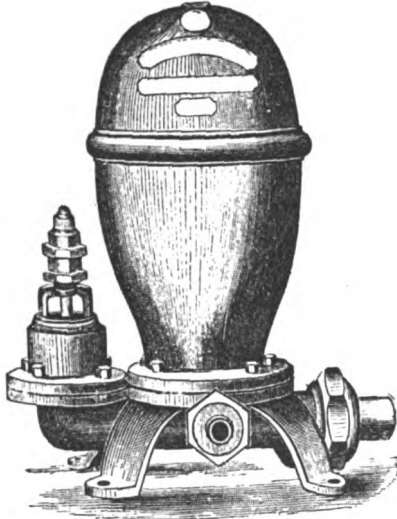


Fig. 184.

For the Supply of Dwellings, Factories, Villages, Railroad Stations, Stock Yards, &c., with Running Water.

## Prices and Capacity of Rams.

No.	Size.	Quantity of Water Furnished by the Fountain to which the Ram is adapted.	Length of Drive Pipe.	Calibre of Pipes.	Price, each.
		$\frac{1}{2}$ gal. to 2 galls. per min.	25 to 40 ft.	Drive. Disch'g.	
" 3	1	" 4	"	$\frac{3}{4}$ in. $\frac{3}{4}$ in.	\$9.00
" 4	2	" 8	"	$1\frac{1}{2}$ " $1\frac{1}{2}$ "	11.00
" 5	3	" 14	"	2 " 1 "	14.00
" 6	4	" 25	"	$2\frac{1}{2}$ " $1\frac{1}{4}$ "	22.00
" 7	8	" 60	"	4 " 2 "	40.00
" 8	12	" 120	"	6 " $2\frac{1}{2}$ "	75.00
" 9	80	" 250	"	9 " $3\frac{1}{2}$ "	125.00
					225.00

The size of the pipes should vary in proportion to the distance the water is to be conveyed, as the greater the distance the larger the pipe in proportion to the size of the machine. This applies to both the drive and discharge pipes.

By means of an Adjuster applied to each of our Rams, the quantity of water drawn from the fountain may be varied at pleasure—thus readily adapting the machine to a variable supply. The above table exhibits at a glance the capacity, size, price, etc.

# BUCKET PLUNGER STEAM PUMPS. WILLIAM WRIGHT'S PATENT.

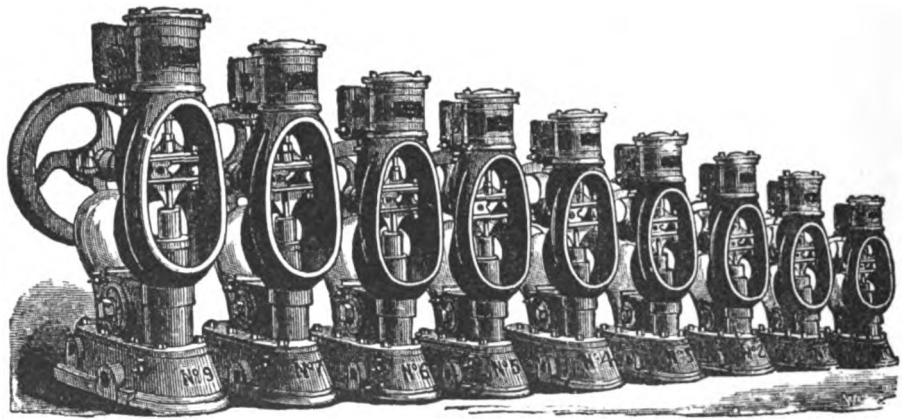


Fig. 185.

Above cut shows the nine regular sizes carried in stock, and suitable to feed from ten to five hundred horse power steam boilers; also used for filling tanks, for fire purposes, or to run as a steam engine to furnish power.

## Prices and Capacity of Pumps.

No.	Designating sizes.	Diameter of Steam Cylinder in inches.	Diameter of Water Plunger in inches.	Displacement in gallons, per revolution.	Revolutions per minute for Boiler Feeding.	Boilers in Horse Power they will supply.	Length of Floor Space required in feet and inches.	Height in feet and inches required to set a Pump.	Width of space in feet and inches required for Pump.	Weight of Pump in lbs.	Size of Steam Pipe.	Size of Exhaust Pipe.	Size of Suction Pipe.	Size of Discharge Pipe.	Price, each.
0	4	$2\frac{1}{4}$	$2\frac{1}{4}$	91	80	25	$1\frac{1}{2}$ —3	$2\frac{1}{2}$ —3	$1\frac{1}{4}$ —1	175	$\frac{1}{2}$ — $\frac{3}{4}$	1	$1\frac{1}{4}$	1	\$85.00
1	5	$2\frac{3}{4}$	$2\frac{3}{4}$	107	70	40	$1\frac{1}{2}$ —6	$2\frac{1}{2}$ —7	$1\frac{1}{4}$ —5	275	$\frac{1}{2}$ — $\frac{3}{4}$	1	$1\frac{1}{4}$	1	115.00
2	$5\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$	110	60	50	$1\frac{1}{2}$ —10	$2\frac{1}{2}$ —10	$1\frac{1}{4}$ —7 $\frac{1}{2}$	350	$\frac{1}{2}$ — $\frac{3}{4}$	1	$1\frac{1}{4}$	1	160.00
3	7	$4\frac{1}{4}$	$4\frac{1}{4}$	18	50	70	$2\frac{1}{2}$ —1	$3\frac{1}{2}$ —1	$1\frac{1}{4}$ —10	550	$\frac{1}{2}$ — $\frac{3}{4}$	1	$1\frac{1}{4}$	1	200.00
4	8	$5\frac{1}{4}$	$5\frac{1}{4}$	38	40	120	$2\frac{1}{2}$ —5	$3\frac{1}{2}$ —11	$2\frac{1}{4}$ —3	900	1	$1\frac{1}{4}$	3	2	250.00
5	10	$6\frac{1}{2}$	$6\frac{1}{2}$	51	40	170	$2\frac{1}{2}$ —10	$4\frac{1}{2}$ —2	$2\frac{1}{4}$ —8	1200	1	$1\frac{1}{4}$	3	2	325.00
6	10	7	7	91	35	250	$2\frac{1}{2}$ —10	$5\frac{1}{2}$ —2	$2\frac{1}{4}$ —8	1600	$1\frac{1}{4}$	$1\frac{1}{2}$	4	2	400.00
7	12	8	8	130	35	300	$3\frac{1}{2}$ —6	$5\frac{1}{2}$ —3	$2\frac{1}{4}$ —8	1900	2	$2\frac{1}{2}$	5	3	500.00
8	14	10	10	204	35	500	$4\frac{1}{2}$ —6	$5\frac{1}{2}$ —8	$3\frac{1}{4}$ —4	2850	$2\frac{1}{2}$	3	6	5	650.00

# A. B. C. BUCKET PLUNGER STEAM PUMP.

For Feeding Boilers, Filling Tanks or to Run as a Steam Engine to Furnish Power.

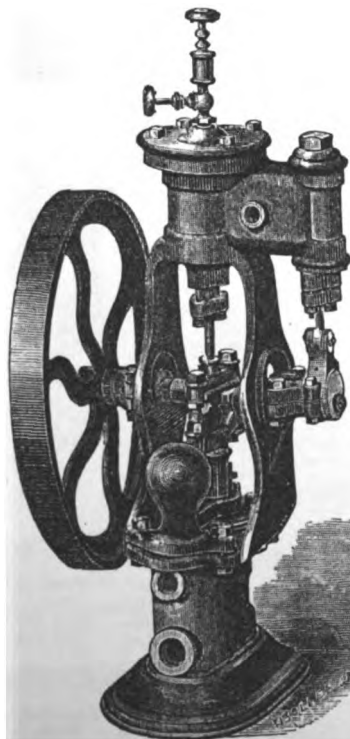


Fig. 186.

## Prices and Capacity A. B. C. Bucket Plunger Steam Pumps.

Fig. 186.

Letter designating sizes.	Diameter Steam Cyl. in inches.	Diameter Water Cyl. in inches.	Stroke in inches.	Revolutions per minute.	Gallons Discharged.	Weight of Pump in pounds.	Size of Steam Pipe, inches.	Size of Exhaust Pipe, inches.	Size of Suction Pipe, inches.	Size of Discharge Pipe, inches.	Price, each.
A	3	$1\frac{1}{2}$	$2\frac{1}{2}$	100	2.80	120	$\frac{1}{2}$ — $\frac{3}{4}$	$\frac{1}{2}$ — $\frac{3}{4}$	1	$\frac{1}{2}$ — $\frac{3}{4}$	\$45.00
B	4	$2\frac{1}{4}$	$2\frac{1}{2}$	90	5.77	180	$\frac{1}{2}$ — $\frac{3}{4}$	$\frac{1}{2}$ — $\frac{3}{4}$	$1\frac{1}{4}$	1	65.00
C	5	$3\frac{1}{2}$	$2\frac{1}{2}$	90	6.88	275	$\frac{1}{2}$ — $\frac{3}{4}$	$\frac{1}{2}$ — $\frac{3}{4}$	$1\frac{1}{2}$	$1\frac{1}{4}$	85.00

## Prices and Capacity Acme Steam Pumps.

Fig. 187.

Number Designating sizes.	Weight of Pump in pounds.	Steam Cylinder.	Water Cylinder.	Gallons per Stroke.	Stroke per Minute capable of Running.	Capacity at 100 Revolutions.	Size of Steam Pipe, inches.	Size of Exhaust Pipe, inches.	Size of Suction Pipe, inches.	Size of Discharge Pipe, inches.	Price, each.
0	150	3	$1\frac{1}{2}$	.04	20 to 500	4 galls.	$\frac{1}{2}$ — $\frac{3}{4}$	$\frac{1}{2}$ — $\frac{3}{4}$	1	$\frac{1}{2}$ — $\frac{3}{4}$	\$70.00
1	210	4	$2\frac{1}{2}$	.07	20 to 500	7 " "	$\frac{1}{2}$ — $\frac{3}{4}$	$\frac{1}{2}$ — $\frac{3}{4}$	1	$\frac{1}{2}$ — $\frac{3}{4}$	95.00
2	328	5	$2\frac{1}{2}$	.12	20 to 500	12 " "	$\frac{1}{2}$ — $\frac{3}{4}$	$\frac{1}{2}$ — $\frac{3}{4}$	$1\frac{1}{4}$	1	135.00
3	460	6	3	.20	20 to 500	20 " "	$\frac{1}{2}$ — $\frac{3}{4}$	$\frac{1}{2}$ — $\frac{3}{4}$	$1\frac{1}{2}$	1	170.00
4	750	7	$3\frac{1}{2}$	.33	20 to 400	33 " "	1	$\frac{1}{2}$ — $\frac{3}{4}$	$1\frac{1}{2}$	1	200.00
5	1050	$8\frac{1}{2}$	$4\frac{1}{4}$	.49	20 to 400	49 " "	1	$1\frac{1}{4}$	3	$2\frac{1}{2}$	275.00

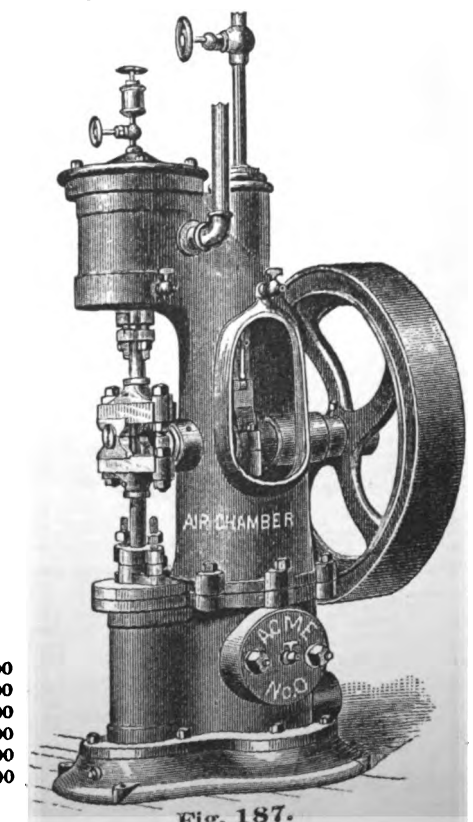


Fig. 187.



## THE DAVIDSON IMPROVED STEAM PUMPS.

### REGULAR HEAVY PRESSURE OR BOILER FEED PUMP.

#### Description.

This is the only Steam Pump made that can be run at high piston speed without shock, and with safety to the machine.

Piston rods, stuffing boxes, valve seats, stems and lining of water cylinders are of the best composition metal, U. S. standard.

Pumps from this list constructed to operate hydraulic elevators, by pumping into closed or open tanks. Suction and delivery openings on both sides. Valves arranged for hot or cold water.

Proportions, as per list below, will be changed, or different sizes made to order when required. Gun-metal water ends at just difference in cost of metal.

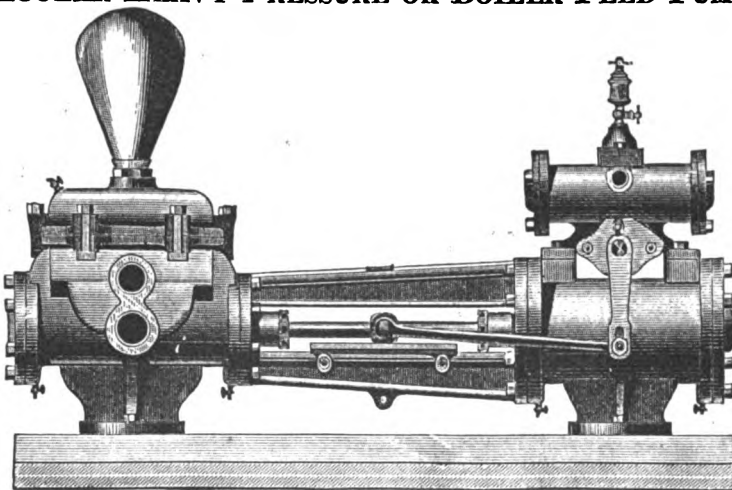


Fig. 188.

#### Prices and Dimensions.

Size No.	Diameter of Steam Cylinder.	Diameter of Water Cylinder.	Length of Stroke.	Gallons per Stroke.	Capacity per Minute at Given Speed.	Strokes per Minute Capable of Running.	Size of Steam Pipe.	Size of Exhaust Pipe.	Size of Suction.	Size of Discharge.	Price.
1	3	2	6	.05	150	7 1/2	1 to 500	1 1/2	1 1/2	1 1/2	\$90.00
2	4	3	8	.13	150	19 1/2	1 to 450	1 1/2	1 1/2	1 1/2	150.00
3	5	4	10	.28	125	35	1 to 400	1 1/2	1 1/2	1 1/2	200.00
4	6	5	12	.54	120	65	1 to 350	1 1/2	1 1/2	1 1/2	300.00
5	8	6	14	1.12	100	112	1 to 300	1 1/2	1 1/2	1 1/2	400.00
6	10	8	16	1.47	100	147	1 to 300	1 1/2	1 1/2	1 1/2	450.00
7	12	10	18	2.00	100	200	1 to 250	1 1/2	1 1/2	1 1/2	525.00

#### LIGHT SERVICE TANK AND CIRCULATING PUMP.

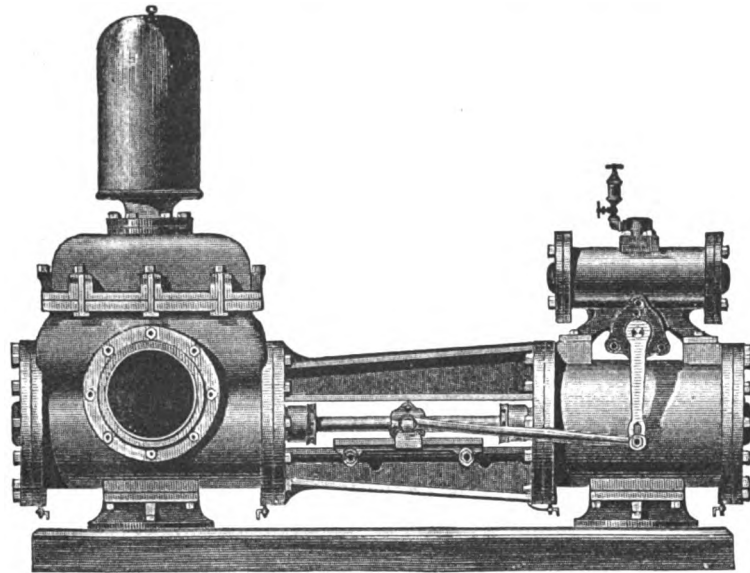


Fig. 189.

This Pump is intended to move liquids under limited head, and in larger quantities than the regular pressure pump, Fig. 188. It is especially adapted to marine purposes for circulating water through condensers, pumping bilge, etc., and for railroads, breweries, tanneries, refrigerating and ice machines, etc.

#### Prices and Dimensions.

Size No.	Diameter of Steam Cylinder.	Diameter of Water Cylinder.	Length of Stroke.	Gallons per Stroke.	Capacity per Minute at Given Speed.	Strokes per Minute Capable of Running.	Size of Steam Pipe.	Size of Exhaust Pipe.	Size of Suction.	Size of Discharge.	Price.
1	3	2	6	.21	150	31	1 to 350	1 1/2	1 1/2	1 1/2	\$180.00
2	4	3	8	.33	150	40	1 to 350	1 1/2	1 1/2	1 1/2	200.00
3	5	4	10	.43	125	53	1 to 350	1 1/2	1 1/2	1 1/2	250.00
4	6	5	12	.68	125	85	1 to 350	1 1/2	1 1/2	1 1/2	300.00
5	8	6	14	.85	120	102	1 to 300	1 1/2	1 1/2	1 1/2	325.00
6	10	8	16	1.22	120	146	1 to 300	1 1/2	1 1/2	1 1/2	350.00
7	12	10	18	1.66	120	200	1 to 300	1 1/2	1 1/2	1 1/2	375.00
8	14	12	20	1.22	120	146	1 to 300	1 1/2	1 1/2	1 1/2	385.00
9	16	14	22	1.66	120	200	1 to 300	1 1/2	1 1/2	1 1/2	425.00
10	18	16	24	2.17	120	260	1 to 300	1 1/2	1 1/2	1 1/2	425.00
11	20	18	26	1.46	100	146	1 to 300	1 1/2	1 1/2	1 1/2	450.00
12	22	20	28	2.00	100	200	1 to 300	1 1/2	1 1/2	1 1/2	475.00
13	24	22	30	2.61	100	261	1 to 300	1 1/2	1 1/2	1 1/2	475.00
14	26	24	32	3.30	100	330	1 to 300	1 1/2	1 1/2	1 1/2	500.00
15	28	26	34	2.00	100	200	1 to 300	1 1/2	1 1/2	1 1/2	475.00
16	30	28	36	2.61	100	261	1 to 300	1 1/2	1 1/2	1 1/2	500.00
17	32	30	38	4.08	100	408	1 to 300	1 1/2	1 1/2	1 1/2	550.00
18	34	32	40	5.87	100	587	1 to 275	1 1/2	1 1/2	1 1/2	625.00
19	36	34	42	3.30	100	330	1 to 275	1 1/2	1 1/2	1 1/2	600.00
20	38	36	44	4.08	100	408	1 to 275	1 1/2	1 1/2	1 1/2	650.00
21	40	38	46	5.87	100	587	1 to 275	1 1/2	1 1/2	1 1/2	700.00

Prices for larger sizes furnished on application.

#### Description.

The peculiarity of the steam end of this pump is, that unlike other direct-acting steam pumps, it has only one valve in the steam chest. This may be properly called a compound slide-valve with cylindrical face. It performs two duties: that of the ordinary slide-valve and of the auxiliary valve combined.

The water end is of entirely new design, and is the only improvement that has been made in this end of a steam pump for the last twenty years.

It is without question the simplest made. It has but one joint to blow out, and that in plain sight.

The water valves and whole inside can be gotten at by the removal of one plate or bonnet.

Every Pump thoroughly tested before leaving the factory.

#### IMPROVED FIRE PUMP.

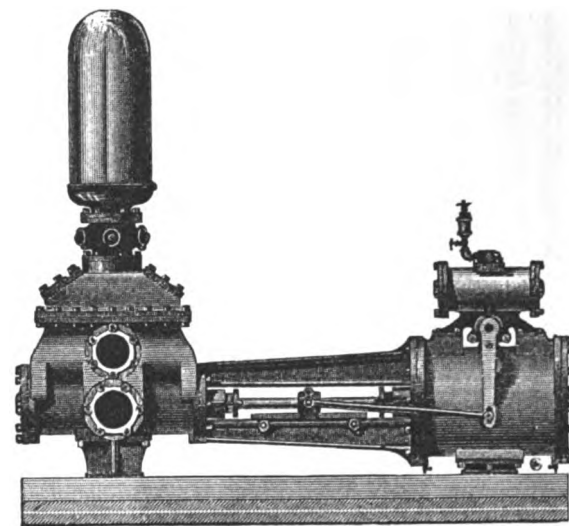


Fig. 190.

This Pump will throw more water, and throw it higher, with less expenditure of power, than any steam pump made. It has from one-fifth to one-half more area in suction and delivery valve than any other. Estimates and plans furnished for independent quick-steaming fire apparatus for warehouses, factories, hotels, towns and villages.

#### Prices and Dimensions.

Size No.	Diameter of Steam Cylinder.	Diameter of Water Cylinder.	Length of Stroke.	Gallons per Stroke.	Capacity per Minute at Given Speed.	Strokes per Minute Capable of Running.	Size of Steam Pipe.	Size of Exhaust Pipe.	Size of Suction.	Size of Discharge.	Price.
1	3	2	6	1.02	150	153	1 to 300	1 1/2	1 1/2	1 1/2	\$400.00
2	4	3	8	1.02	150	153	1 to 300	1 1/2	1 1/2	1 1/2	425.00
3	5	4	10	1.02	150	153	1 to 300	1 1/2	1 1/2	1 1/2	450.00
4	6	5	12	1.47	150	220	1 to 300	1 1/2	1 1/2	1 1/2	500.00
5	8	6	14	2.00	150	300	1 to 300	1 1/2	1 1/2	1 1/2	525.00
6	10	8	16	1.71	125	219	1 to 275	1 1/2	1 1/2	1 1/2	525.00
7	12	10	18	2.33	125	298	1 to 275	1 1/2	1 1/2	1 1/2	600.00
8	14	12	20	2.06	113	300	1 to 250	1 1/2	1 1/2	1 1/2	650.00
9	16	14	22	3.48	113	393	1 to 250	1 1/2	1 1/2	1 1/2	800.00
10	18	16	24	3.91	100	391	1 to 250	1 1/2	1 1/2	1 1/2	.....
11	20	18	26	4.80	100	496	1 to 250	1 1/2	1 1/2	1 1/2	.....
12	22	20	28	5.50	90	495	1 to 200	1 1/2	1 1/2	1 1/2	.....
13	24	22	30	6.80	90	612	1 to 200	1 1/2	1 1/2	1 1/2	.....
14	26	24	32	9.05	80	724	1 to 175	1 1/2	1 1/2	1 1/2	.....
15	28	26	34	10.77	80	861	1 to 175	1 1/2	1 1/2	1 1/2	.....
16	30	28	36	11.75	75	881	1 to 150	1 1/2	1 1/2	1 1/2	.....
17	32	30	38	16.00	75	1200	1 to 150	1 1/2	1 1/2	1 1/2	.....
18	34	32	40	18.00	75	1200	1 to 125	1 1/2	1 1/2	1 1/2	.....
19	36	34	42	18.00	75	1200	1 to 125	1 1/2	1 1/2	1 1/2	.....
20	38	36	44	26.43	75	1082	1 to 125	1 1/2	1 1/2	1 1/2	.....

Two, four, six and eight-way Brass Hose Connections, with caps, as shown in cut, furnished when ordered at extra price.

# THE DAVIDSON IMPROVED STEAM PUMPS.

## IMPROVED MINING PUMP. PLUNGER PATTERN.

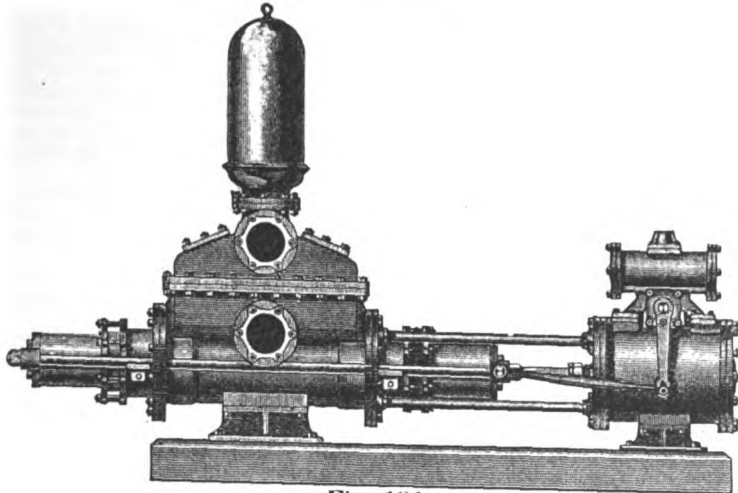


Fig. 191.

This pump can be run at double the rate of piston speed of any steam pump made, single or duplex, and that without shock.

The advantages of the double plunger over the piston pump will be readily observed by those engaged in or operating mines, or those using pumps where the water contains gritty matter, so destructive to water cylinders, pistons and rods of the ordinary piston pump.

## IMPROVED INDEPENDENT AIR PUMP AND CONDENSER.

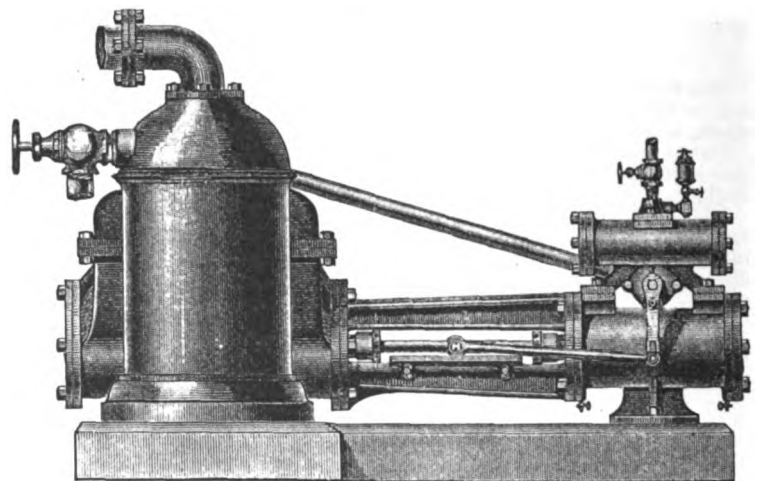


Fig. 192.

By using this condenser, a great saving in fuel or an increase of power can be had at small cost, where water is available. It has been tested under varying conditions, and its superior qualities fully demonstrated. It can be set up by any mechanic, and in most cases requires no masonry foundation. It occupies but little more floor space than a common steam pump. It is noiseless in its operation, and its location in engine-room is entirely unobjectionable.

### Prices and Dimensions.

Size No.	Diam. of Steam Cylinder.	Diam. of Plunger Cylinder.	Length of Plunger.	Strokes.	Galls. per stroke.	Capacity per minute at given speed.	Strokes per minute.	Size of Suction Pipe.	Size of Discharge Pipe.	Size of Suction Valve.	Size of Discharge Valve.	Plunger Pumps.	PISTON PUMPS.	
													Regular Pattern.	Removable Cyl. Pattern.
1	7	4	10	54	120	65	1 to 300	1	1 1/4	2 1/2	2	\$125.00	\$350.00	\$385.00
2	8	4	10	54	120	65	1 to 300	1	1 1/4	2 1/2	2	450.00	375.00	400.00
3	9	4	12	65	120	65	1 to 300	1	1 1/4	2 1/2	2	500.00	400.00	410.00
4	9	3	12	102	100	102	1 to 300	1	1 1/4	2 1/2	2	550.00	430.00	475.00
5	10	5	12	102	100	102	1 to 300	1 1/4	2 1/2	3 1/2	3 1/2	575.00	450.00	500.00
6	10	6	12	147	100	147	1 to 275	1 1/4	2 1/2	3 1/2	3 1/2	600.00	475.00	525.00
7	12	5	12	102	100	102	1 to 275	1 1/2	2 1/2	3 1/2	3 1/2	600.00	475.00	525.00
8	12	6	12	147	100	147	1 to 275	1 1/2	2 1/2	3 1/2	3 1/2	650.00	500.00	550.00
9	12	7	12	200	100	200	1 to 275	1 1/2	2 1/2	3 1/2	3 1/2	700.00	525.00	600.00
10	14	6	14	171	86	147	1 to 250	2 1/2	3 1/2	3 1/2	3 1/2	700.00	525.00	575.00
11	14	7	14	233	86	200	1 to 250	2 1/2	3 1/2	3 1/2	3 1/2	775.00	600.00	600.00
12	16	7	16	266	75	200	1 to 200	2 1/2	3 1/2	3 1/2	3 1/2	.....	.....	.....
13	16	8	16	348	75	201	1 to 200	2 1/2	3 1/2	3 1/2	3 1/2	.....	.....	.....
14	18	8	18	391	67	201	1 to 200	2 1/2	3 1/2	3 1/2	3 1/2	.....	.....	.....
15	18	9	18	496	67	332	1 to 200	2 1/2	3 1/2	3 1/2	3 1/2	.....	.....	.....
16	18	10	18	612	67	410	1 to 200	2 1/2	3 1/2	3 1/2	3 1/2	.....	.....	.....
17	20	9	20	550	60	330	1 to 180	3 1/2	4 1/2	3 1/2	3 1/2	.....	.....	.....
18	20	10	20	680	60	408	1 to 180	3 1/2	4 1/2	3 1/2	3 1/2	.....	.....	.....
19	22	11	22	905	55	498	1 to 180	3 1/2	4 1/2	3 1/2	3 1/2	.....	.....	.....
20	22	12	22	1077	55	592	1 to 180	3 1/2	4 1/2	3 1/2	3 1/2	.....	.....	.....
21	24	10	24	816	50	408	1 to 180	4 1/2	5 1/2	3 1/2	3 1/2	.....	.....	.....
22	24	12	24	1175	50	587	1 to 180	4 1/2	5 1/2	3 1/2	3 1/2	.....	.....	.....
23	28	12	24	1175	50	587	1 to 170	4 1/2	5 1/2	3 1/2	3 1/2	.....	.....	.....
24	28	14	24	1600	50	800	1 to 170	4 1/2	5 1/2	3 1/2	3 1/2	.....	.....	.....
25	30	12	24	1175	50	587	1 to 170	5 1/2	6 1/2	3 1/2	3 1/2	.....	.....	.....
26	30	14	24	1600	50	800	1 to 170	5 1/2	6 1/2	3 1/2	3 1/2	.....	.....	.....
27	30	16	24	2088	50	1044	1 to 170	5 1/2	6 1/2	3 1/2	3 1/2	.....	.....	.....
28	36	14	24	1600	50	800	1 to 150	6 1/2	7 1/2	3 1/2	3 1/2	.....	.....	.....
29	36	16	24	2088	50	1044	1 to 150	6 1/2	7 1/2	3 1/2	3 1/2	.....	.....	.....
30	38	18	24	2643	50	1321	1 to 150	7 1/2	8 1/2	3 1/2	3 1/2	.....	.....	.....

### COMBINED BOILER AND PUMP.

The Most Compact, Effective, Durable,

AND AT THE SAME TIME SIMPLE MACHINE FOR FORCING WATER FROM SPRINGS OR RIVERS TO HOTELS, PUBLIC OR PRIVATE INSTITUTIONS, RESIDENCES, RAILWAY STATIONS, BRICK YARDS, BREWERIES, ETC.

### Size of Pipes.

Size No.	Size of Steam Pipe.	Size of Exhaust Pipe.	Size of Suction.	Size of Discharge
1	1 1/2	3/4	1 1/4	1
2	3/4	1	1 1/2	1 1/4
3	3/4	1	2	1 1/2
4	1	1 1/4	2 1/2	2
5	1	1 1/2	3	2 1/2
6	1 1/4	2	4	3
7	1 1/2	2	5	4
8	2 1/2	3	6	5
9	2 1/2	3	7	6
10	2 1/2	3	8	7

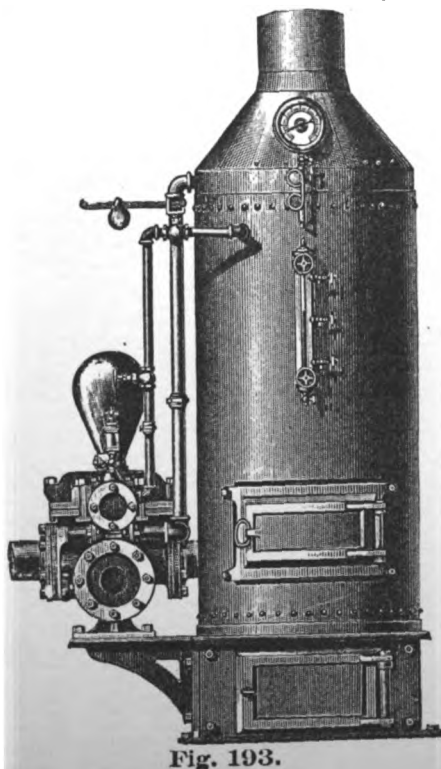


Fig. 193.

Boiler is furnished complete with Feed Pump, Boiler Base, Base Plate, Grates, Smoke Bounet, Steam Gauge, Water Gauge, Gauge Cocks, Blow-off Cocks, Safety Valve, together with the Steam Exhaust and Feed Pipe, with their necessary Valves, Unions, etc., entire and ready for operation.

### Prices and Dimensions.

Size No.	Diameter of Steam Cylinder.	Diameter of Water of Stroke.	Length of Stroke.	Galls. per stroke.	Strokes per min. capable of running.	Price with Boiler and Fittings complete.
1	3 1/2	2	4	.05	1 to 500	Prices on application.
2	4 1/2	2 1/2	6	.13	1 to 450	
3	5 1/2	3 1/4	8	.28	1 to 400	
4	7	4	10	.54	1 to 350	
5	9	5 1/4	12	1.12	1 to 300	
6	10	6	12	1.47	1 to 300	
7	12	7	12	2.00	1 to 300	
8	14	8 1/4	14	3.23	1 to 275	
9	16	9 1/4	16	4.66	1 to 250	
10	18	10 1/2	18	7.50	1 to 250	

# WORTHINGTON STEAM PUMPS.

REGULAR PATTERN STEAM PUMP.

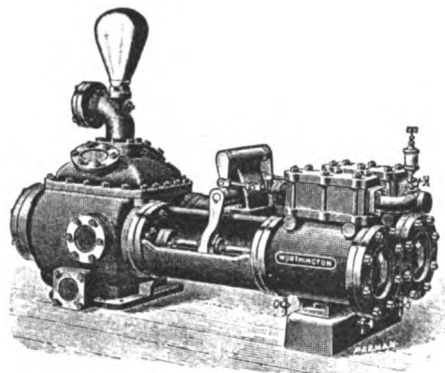


Fig. 194.

STEAM PUMP AND BOILER.

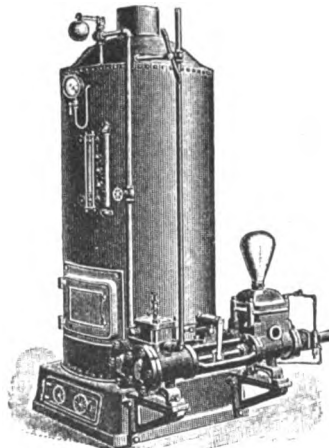


Fig. 195.

LOW SERVICE STEAM PUMP.

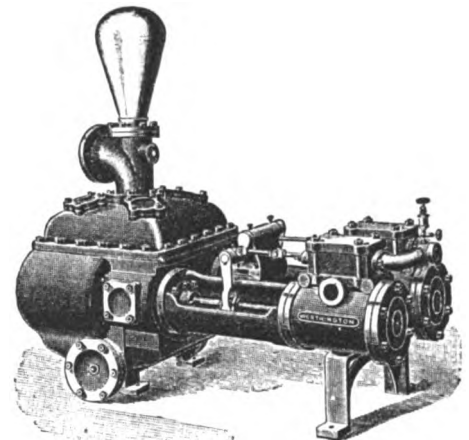


Fig. 196.

## THE WORTHINGTON STEAM PUMPS—"REGULAR PATTERN." FIG. 194.

These Pumps are designed for boiler feeding, fire, hydraulic elevator and general service, where the water pressure does not exceed 150 pounds.

Diameter of Steam Cylinders.	Diameter of Water Plungers.	Length of Stroke.	Displacement in Gallons per Stroke of One Plunger.	Proper Strokes per Minute of one Plunger, Varying with Kind of Work and Pressure.	Gallons Delivered per Minute by both Plungers at Stated Number of Strokes.	PRICE.	Diameter of Plunger Required in any Single Cylinder Pump to do the Same Work at Same Speed.	SIZES OF PIPES FOR SHORT LENGTHS To be Increased as Length Increases.			
								Steam Pipe.	Exhaust Pipe.	Suction Pipe.	Discharge Pipe.
3	2	3	.04	100 to 250	8 to 20	Prices on application.	2 7/8	3	1 1/2	1	3/4
4 1/2	2 3/4	4	.10	100 to 200	20 to 40		4	1 1/2	1 1/2	2	1 1/2
5 1/4	3 1/2	5	.20	100 to 200	40 to 80		5	1 1/2	1 1/2	2 1/2	1 1/2
6	4	6	.33	100 to 150	70 to 100		5 5/8	1 1/2	1 1/2	3	2
7 1/2	4 1/2	10	.69	75 to 125	100 to 170		6 3/8	1 1/2	2	4	3
9	5 1/4	10	.93	75 to 125	135 to 230		7 1/8	2	2 1/2	4	3
10	6	10	1.22	75 to 125	180 to 300		8 1/2	2	2 1/2	5	4
10 1/2	7	10	1.66	75 to 125	245 to 410		9 7/8	2	2 1/2	6	5
12	7	10	1.66	75 to 125	245 to 410		9 7/8	2 1/2	3	6	5
14	7	10	1.66	75 to 125	245 to 410		9 7/8	2 1/2	3	6	5
12	8 1/2	10	2.45	75 to 125	365 to 610		12	2 1/2	3	6	5
14	8 1/2	10	2.45	75 to 125	365 to 610		12	2 1/2	3	6	5
16	8 1/2	10	2.45	75 to 125	365 to 610		12	2 1/2	3	6	5
18 1/2	8 1/2	10	2.45	75 to 125	365 to 610		12	3	3 1/2	6	5
20	8 1/2	10	2.45	75 to 125	365 to 610		12	4	5	6	5
12	10 1/4	10	3.57	75 to 125	530 to 890		14 1/4	2 1/2	3	8	7
14	10 1/4	10	3.57	75 to 125	530 to 890		14 1/4	2 1/2	3	8	7
16	10 1/4	10	3.57	75 to 125	530 to 890		14 1/4	2 1/2	3	8	7
18 1/2	10 1/4	10	3.57	75 to 125	530 to 890		14 1/4	3	3 1/2	8	7
20	10 1/4	10	3.57	75 to 125	530 to 890		14 1/4	4	5	8	7

## THE WORTHINGTON "LOW SERVICE" PUMPS. FIG. 196.

These Pumps are designed for use in connection with railroad water stations, oil tanks, oil refineries, and other places where fluid is to be raised to a moderate height with ordinary steam pressure.

Diameter of Steam Cylinders.	Diameter of Water Plungers.	Length of Stroke.	Displacement in Gallons per Stroke of One Plunger.	Proper Strokes per Minute of one Plunger, Varying with Kind of Work and Pressure.	Gallons Delivered per Minute by both Plungers at Stated Number of Strokes.	PRICE.	Diameter of Plunger Required in any Single Cylinder Pump to do the Same Work at Same Speed.	SIZES OF PIPES FOR SHORT LENGTHS To be Increased as Length Increases.			
								Steam Pipe.	Exhaust Pipe.	Suction Pipe.	Discharge Pipe.
4 1/2	3 3/4	4	.20	100 to 200	40 to 80	Prices on application.	5 1/4	1 1/2	1 1/2	2 1/2	1 1/2
5 1/4	4 3/4	5	.38	100 to 150	75 to 110		6 3/8	1 1/2	1 1/2	3	2
6	5 3/4	6	.67	100 to 150	130 to 195		8 1/8	1 1/2	1 1/2	4	2 1/2
7 1/2	6 3/4	6	1.14	100 to 150	225 to 340		10 1/4	1 1/2	1 1/2	5	4
9	7 3/4	6	1.47	100 to 150	295 to 440		12	1 1/2	1 1/2	6	5
10 1/2	8 3/4	6	1.22	75 to 125	180 to 300		8 1/2	1 1/2	2	5	4
12	9 3/4	6	1.66	75 to 125	245 to 410		9 7/8	1 1/2	2	6	5
14	10 3/4	6	2.45	75 to 125	365 to 610		12	1 1/2	2 1/2	6	5
16	11 3/4	6	3.57	75 to 125	530 to 890		14 1/4	1 1/2	2	8	7
18 1/2	12 3/4	6	3.57	75 to 125	530 to 890		14 1/4	2	2 1/2	8	7
20	13 3/4	6	3.57	75 to 125	530 to 890		14 1/4	2	2 1/2	8	7

## THE WORTHINGTON "STEAM PUMP AND BOILER." FIG. 195.

Complete with auxiliary feed, boiler base, smoke bonnet, shaking and dumping grate, water columns, gauge glass, gauge cocks, steam gauge, safety valve, globe valves, two-way exhaust cock, blow-off cocks, steam and exhaust pipes, boiler feed, connections, and all necessary fittings.

### "Regular Pattern" for General Service.

Diameter of Steam Cylinders.	Diameter of Water Plungers.	Length of Stroke.	Proper Strokes per Minute of ONE Plunger, Varying with Kind of Work and Pressure.	Gallons Delivered per Minute by both Plungers at Stated Number of Strokes.	DIMENSIONS OF BOILER.				PRICE COMPLETE.	SIZES OF PIPES FOR SHORT LENGTHS. To be increased as length increases.			
					Diameter of Shell.	Height of Shell.	Number of Tubes.	Length of Tubes.		Steam Pipe.	Exhaust Pipe.	Suction Pipe.	Discharge Pipe.
3	2	3	75 to 200	6 to 16	21	60	20-2	36	Prices on application.	3	1 1/2	1	3/4
4 1/2	2 3/4	4	75 to 150	15 to 30	21	60	20-2	42		3	1 1/2	2	1 1/2
5 1/4	3 1/2	5	75 to 150	30 to 60	30	60	51-3	43		3	1 1/2	2 1/2	1 1/2
6	4	6	75 to 125	50 to 80	30	75	42-2	54		1	1 1/2	3	2
7 1/2	4 1/2	10	75 to 100	100 to 140	36	81	55-2	60		1 1/2	2	4	3
9	5 1/4	10	75 to 100	140 to 185	42	87	73-2	63		2	2 1/2	4	3
10	6	10	75 to 100	185 to 245						2	2 1/2	5	4

### "Low Service" or Tank Pumps.

Diameter of Steam Cylinders.	Diameter of Water Plungers.	Length of Stroke.	Proper Strokes per Minute of ONE Plunger, Varying with Kind of Work and Pressure.	Gallons Delivered per Minute by both Plungers at Stated Number of Strokes.	Diameter of Shell.	Height of Shell.	Number of Tubes.	Length of Tubes.	PRICE COMPLETE.	SIZES OF PIPES FOR SHORT LENGTHS. To be increased as length increases.			
										Steam Pipe.	Exhaust Pipe.	Suction Pipe.	Discharge Pipe.
4 1/2	3 3/4	4	75 to 150	35 to 65	24	60	20-2	42	Prices on application.	1 1/2	1 1/2	2 1/2	1 1/2
6	5 3/4	6	75 to 125	100 to 170	30	75	42-2	54		1 1/2	1 1/2	4	2 1/2
7 1/2	6	10	75 to 100	185 to 245	36	81	55-2	60		1 1/2	2	5	4
9	7 3/4	10	75 to 100	250 to 335	36	81	55-2	60		2	2 1/2	6	5
10	8 3/4	10	75 to 100	370 to 490	42	87	73-2	63		2	2 1/2	6	5

## KNOWLES' STEAM PUMPS.

BOILER FEED OR PRESSURE PUMP,  
Arranged for Hot or Cold Water or other Liquids.

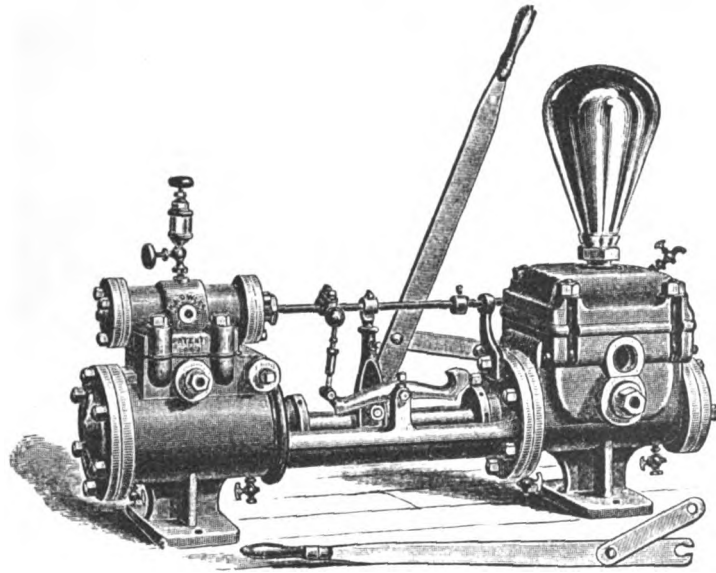


Fig. 197.

## Prices and Dimensions.

No.	Steam Cyl. der. Inches.	Water Cyl. der. Inches.	Stroke. Inches.	Gallons per Stroke.	Capacity per Minute at Ordinary Speed.	Steam Pipe. Inches.	Exhaust Pipe. Inches.	Suction Pipe. Inches.	Delivery Pipe. Inches.	Floor Space Required. Inches.	PRICE.
000	2½	1½	3	.023	150 Strokes, 3½ gals.	1½	¾	1½	¾	17x5	\$40.00
00	3	1¾	3	.031	150 " 4¾ "	1½	¾	1½	¾	18x5	55.00
0	3½	2	4	.05	150 " 7½ "	1½	¾	1½	1	26x6	85.00
1	3½	2½	4	.07	150 " 10½ "	1½	¾	1½	1	28x7	125.00
2	4	2½	5	.11	150 " 16½ "	1½	¾	1½	1	31x8	150.00
3	5	3½	7	.25	125 " 31 "	1½	1	2	1½	44x13	200.00
4	5½	3½	7	.34	125 " 42 "	1½	1	2	1½	45x14	225.00
4½	7	4	7	.39	125 " 49 "	1	1½	2½	2	45x14	275.00
5	7	4½	10	.69	100 " 69 "	1	1½	3	2½	55x16	350.00
6	7½	5	10	.85	100 " 85 "	1	1½	3	2½	55x16	375.00
6½	8	5	12	1.02	100 " 102 "	1	1½	4	4	67x19	400.00
7	10	6	12	1.47	100 " 147 "	1½	1½	4	4	67x19	450.00
8	12	7	12	2.00	100 " 200 "	2	2½	5	5	67x20	525.00
9	14	8	12	2.61	100 " 261 "	2	2½	5	5	67x20	600.00
10	16	10	16	5.44	75 " 408 "	2½	3	6	6	80x22	.....
11	18	12	24	11.75	50 " 588 "	3½	4	8	8	110x27	.....
12	20	14	24	16.00	50 " 800 "	3½	4	10	8	111x29	.....

The Nos. 0, 1, 2, 3, 4 and 4½ pumps are provided with hand power attachments.

## COMBINED BOILER AND PUMP.

Fig. 198.

This combination of Knowles' Improved Steam Pump with Upright Tubular Boiler and Fixtures complete is a most compact, serviceable and inexpensive machine for supplying water to hotels, public buildings and residences; also for use in railroad water stations, brick yards, tanneries, quarries, etc.

The attention of railroad officials is particularly called to the especial advantage of this light, portable and convenient pumping apparatus for the water supply of tanks at watering stations. The entire machine can be placed at the point from which the water is to be taken, and the water forced to any distance and height required.

Complete with auxiliary boiler feed pump, base plate, smoke bonnet, grate bars, gauge cocks, steam gauge, water gauge, safety valve, globe valves, blow-off cocks, steam and exhaust pipes, boiler feed connection, valves, unions and necessary fittings, etc.

## Prices and Dimensions.

Size No.	Steam Cyl. der. Inches.	Water Cyl. der. Inches.	Stroke. Inches.	Gallons per Stroke.	Steam Pipe. Inches.	Exhaust Pipe. Inches.	Suction Pipe. Inches.	Delivery Pipe. Inches.	Floor Space Required. Inches.	Price Complete.
000	2½	1½	3	.023	1½	¾	1½	¾	28x31	\$150.00
00	3	1¾	3	.031	1½	¾	1½	¾	28x31	165.00
0*	3½	2	4	.05	1½	¾	1½	1	37x39	285.00
1*	3½	2½	4	.07	1½	¾	1½	1	38x40	325.00
2*	4	2½	5	.11	1½	¾	1½	1	38x40	350.00
3*	5	3½	7	.25	1½	1	2	1½	40x44	450.00
4*	5½	3½	7	.34	1½	1	2	1½	40x44	475.00
4½	7	4	7	.39	1	1½	2½	2	40x46	525.00
5	7	4½	10	.69	1	1½	3	2½	54x58	.....
6	7½	5	10	.85	1	1½	3	2½	56x58	.....
6½	8	5	12	1.02	1	1½	4	4	58x58	.....
7	10	6	12	1.47	1½	1½	4	4	.....	.....
8	12	7	12	2.00	2	2½	5	5	.....	.....
9	14	8	12	2.61	2	2½	5	5	.....	.....

## Tank Pumps.

4*	4	5	.27	1½	¾	2	1½	38x40	\$375.00
5½*	5½	7	.72	¾	1	3	2½	40x48	525.00
6	6	12	1.46	¾	1	4	4	58x58	.....
7½	7½	10	1.09	1	1½	5	5	56x58	.....
8	8	12	2.05	1	1½	5	5	58x58	.....
10	10	12	4.08	1½	1½	6	6	.....	.....
10	10	16	5.43	1½	1½	6	6	.....	.....

The Pumps marked \* are provided with Patent Hand Power Attachments, which are very convenient for filling the boilers (after "blowing-off") or pumping when steam is down.

## TANK OR LIGHT SERVICE PUMPS.

For pumping water or other liquids to limited heights and distances these pumps possess special advantages; they combine large pumping capacity with small expenditure of steam. The steam cylinders in proportion to the pump cylinders, are made smaller in diameter than with the regular pressure pumps, Fig. 197, consequently the first cost is less—for amount of water pumped. These pumps are principally used at railroad water stations, gas and oil works, bleacheries, tanneries, refineries, plantations, distilleries etc. A variety of valves are used adapted for pumping hot, cold, thick, thin, alkaline or other liquids.

For quarries and clay pits, also for coffer dams, tunnels, foundation pits, ore beds, sewerage and irrigating purposes, these pumps are especially adapted, having large water passages and valve openings.

## Prices and Dimensions.

Steam Cylinder Inches.	Water Cylinder Inches.	Stroke. Inches.	Gallons per stroke.	Capacity per Minute at Ordinary Speed.	Steam Pipe. Inches.	Exhaust Pipe. Inches.	Suction Pipe. Inches.	Delivery Pipe. Inches.	Floor Space Required. Inches.	PRICE.
3½	3½	4	.15	125	18	¾	¾	1½	1½	28 x10 \$125.00
4	4	5	.27	125	33	¾	¾	2	1½	34 x11 175.00
5	4	7	.39	125	49	¾	1	2½	2	44 x12 238.00
5½	5½	7	.72	125	90	¾	1	3	2½	44 x13½ 300.00
6	5½	7	.72	125	90	¾	1	3	2½	44 x13½ 300.00
6	6	12	1.47	100	147	¾	1	4	4	66¾x19 350.00
6	7	12	2.00	100	200	¾	1	5	5	66¾x19 375.00
7½	7	10	1.66	100	166	1	1½	5	5	56½x19 375.00
7½	7½	10	1.91	100	191	1	1½	5	5	56½x19 375.00
8	6	12	1.47	100	147	1	1½	4	4	66¾x19 400.00
8	7	12	2.00	100	200	1	1½	5	5	66¾x19 425.00
8	8	12	2.61	100	261	1	1½	5	5	66¾x20 450.00
8	9	12	3.30	100	330	1	1½	6	6	66¾x21½ 475.00
8	10	12	4.08	100	408	1	1½	6	6	66¾x21½ 500.00
10	10	12	4.08	100	408	1½	1½	6	6	66¾x21½ 550.00
10	10	16	5.44	75	408	1½	1½	6	6	78½x21½ 650.00
10	12	12	4.87	100	587	1½	1½	8	6	66¾x23½ 600.00
10	12	16	7.83	75	587	1½	1½	8	6	78½x23½
12	10	12	4.08	100	408	2	2½	6	6	66¾x21½
12	10	16	5.44	75	408	2	2½	6	6	78½x21½
12	12	12	5.87	100	587	2	2½	8	6	66¾x23½
12	12	16	7.83	75	587	2	2½	8	6	78½x23½
14	12	12	5.87	100	587	2	2½	8	6	66¾x23½
14	12	16	7.83	75	587	2	2½	8	6	78½x23½
14	14	16	10.66	75	800	2	2½	10	8	78½x27
14	14	24	16.00	50	800	2½	3	10	8	108 x27
14	16	16	14.92	75	1020	2½	3	12	10	80 x35½
14	16	24	20.88	50	1044	2½	3	12	10	108 x35½
16	14	16	10.66	75	800	2½	3	10	8	78½x27
16	14	24	16.00	50	800	2½	3	10	8	108 x27
16	16	16	14.92	75	1020	2½	3	12	10	80 x35½
16	16	24	20.88	50	1044	2½	3	12	10	108 x35½
16	18	24	26.44	50	1322	2½	3	12	10	108 x38
16	20	24	32.64	50	1632	2½	3	14	12	108 x40
18	16	24	26.88	50	1044	3½	4	12	10	110 x35½
18	18	24	26.44	50	1322	3½	4	12	10	110 x38
18	20	24	32.64	50	1632	3½	4	14	12	110 x40
18	22	24	39.50	50	1975	3½	4	14	14	110 x42
20	18	24	26.44	50	1322	3½	4	12	10	118 x38
20	20	24	32.64	50	1622	3½	4	14	12	118 x40
20	22	24	39.50	50	1975	3½	4	14	14	118 x42
20	24	24	47.00	50	2350	3½	4	16	16	118 x44

## COMBINED BOILER AND PUMP.

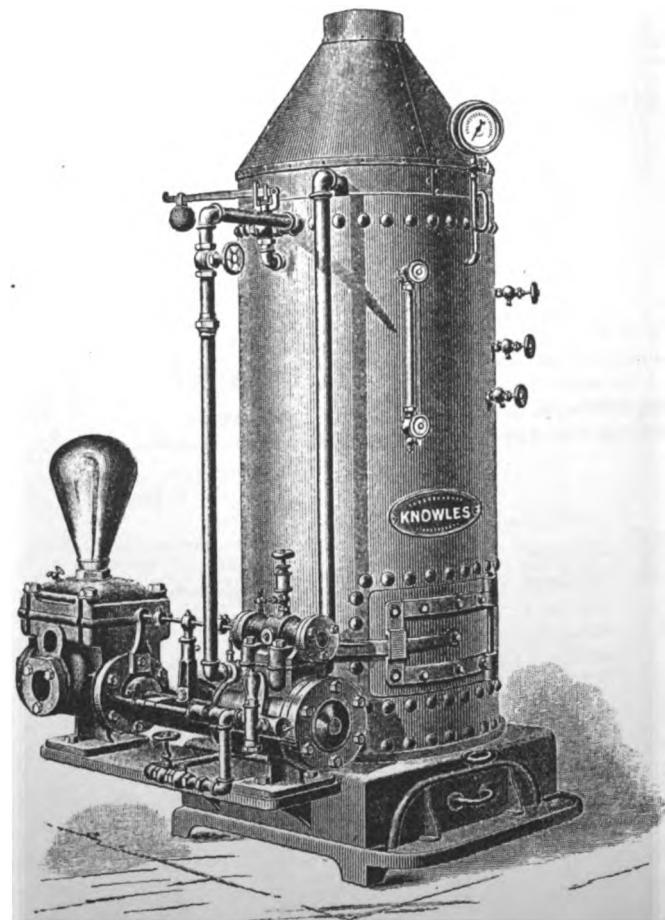


Fig. 198.



# NEW PULSOMETER STEAM PUMP.

# STEAM SYPHON PUMP.

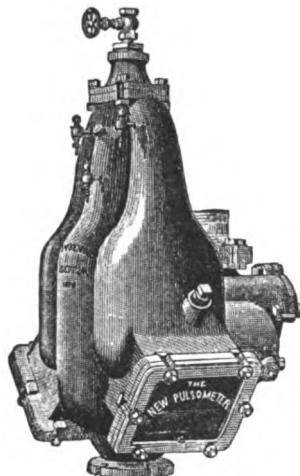


Fig. 199.

Sizes 1 and 2 are best adapted for a total duty of 40 to 50 feet, sizes 3 and 4 from 50 to 60 feet. Sizes 5 and upwards, from 60 to 90 feet.

## Description New Pulsometer Steam Pump. Fig. 199.

The New Pulsometer is a double-acting (two cylinders, one filling while the other is discharging) condensing Steam Pump, without any mechanical appliances to require oiling, absorb power, or get out of order.

All wearing parts are interchangeable, and can be renewed when worn without removing the Pump from its position, without skilled labor or machine shop. It is purely functional and automatic in its operation. No machinery or engine required to run it, only a steam pipe from boiler to pump. The pressure of steam will force the liquid above the pump due the pressure in boiler, while the subsequent condensing of same (by the peculiar construction of pump) forms the lifting power of suction to raise the liquid to the pump.

There being no exhaust from pump a saving is made of fifteen pounds (atmospheric pressure,) over ordinary piston pumps, besides expense of piping to point of exhaust.

In the New Pulsometer the steam and liquid occupy the same cylinder alternately, but do not come in direct contact with each other, for by an arrangement of automatic operating air valves, air is admitted into cylinder at top ahead of the steam, while the liquid is rushing up the suction pipe at bottom, thus forming an air cushion for the steam to strike on upon its entrance, thereby preventing condensation and loss of steam.

It can be worked hung up or stationary, needs no foundation or adjusting into position. It will handle sand, mud or other sediment without breaking or material wear to its working parts.

The New Pulsometer requires but little steam to operate it, only the same bulk as the water it displaces. When the water has been displaced by the steam which follows the water through the opening to the discharge chamber, it will suddenly condense by passing under the water, and the vacuum thereby formed will cause the steam ball to change, shut off the steam, and transmit the pressure to the opposite cylinder, and at the same time induce the water to fill the chamber in place of the condensed steam. Thus will they alternate, keeping up very nearly a continuous stream, as long as there is steam supplied and water to be pumped.

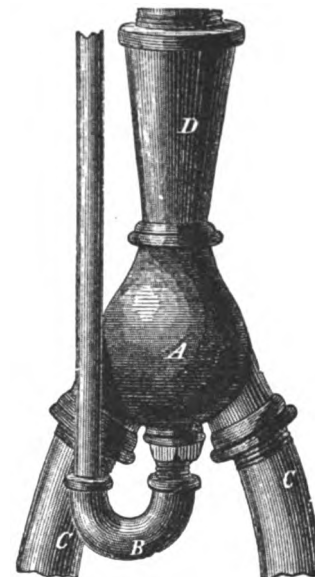


Fig. 200.

## Prices and Capacity Pulsometer Steam Pumps. Fig. 199.

No.	Height, Inches.	Space Occupied, Inches.	Size of Steam Pipe.	Size of Suction Pipe.	Size of Discharge Pipe.	Gallons per Minute.	Weight, Pounds about.	Prices, Pulsometers.	Price of Retention Valve, useful in high or long Deliveries.
1	14	9x7	1/8 in.	1 in.	1 in.	10	35	\$50.00	\$4.00
2	20	15x12	1/4 in.	1 1/2 in.	1 1/2 in.	20	125	75.00	6.00
3	23	17x14	3/8 in.	2 in.	2 in.	60	210	100.00	8.00
4	30	21x16	1/2 in.	2 1/2 in.	2 1/2 in.	100	355	150.00	10.00
5	34	24x20	5/8 in.	3 in.	3 in.	175	475	175.00	15.00
6	40	28x22	3/4 in.	3 1/2 in.	3 1/2 in.	300	605	225.00	20.00
7	43	30x24	7/8 in.	4 in.	4 in.	425	850	275.00	25.00
8	54	33x29	1 in.	5 in.	5 in.	700	1600	400.00	40.00
9	61	37x31	1 1/8 in.	6 in.	6 in.	1000	2000	500.00	50.00
10	80	52x45	2 in.	8 in.	8 in.	2000	5000	1000.00	75.00

The above capacity is estimated on a total height of 25 feet, with 40 pounds steam pressure at the Pump. A deduction must be proportionately made on higher elevations; also greater or less quantity according to pressure of steam. In ordering, state amount and total height required, pressure of steam at the boiler, and distance from the boiler to Pump.

## Prices and Capacity Steam Syphon Pumps. Fig. 200.

	Diameter of Discharge, Inches.	Diameter of Steam, Inches.	Horse Power Required.	Capacity in Gallons per Minute.	High Pressure.	Low Pressure.
Double Suction.	1 1/4	1 1/2	1	30	\$8.00	\$10.00
	1 1/2	1 3/4	1 1/2	50	10.00	12.50
	2	2	2	120	17.50	20.00
	2 1/2	2 1/4	4	200	22.50	25.00
	3	2 1/2	8	320	35.00	40.00
	4	3	12	450	45.00	50.00
Single Suction.	4	2	25	800	65.00	75.00
	6	2 1/2	50	1800	150.00	175.00
	1 1/4	1	3	60	12.50	15.00

Larger sizes with single suction pipe on application. High Pressure Pumps are constructed to work with 30 pounds and upwards of steam pressure. Low Pressure Pumps from 30 pounds to 15 pounds.

Pumps to work below 15 pounds made to special order.

# PORTABLE RAILWAY STEAM SYPHON.

# STEAM RAILROAD WATER STATION.

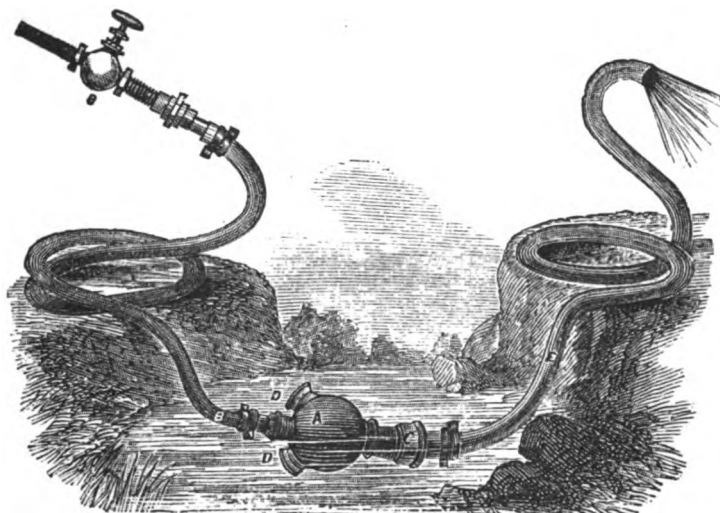


Fig. 201

For supplying locomotive tenders from any body of water within reach, near the side of the road. B is the steam hose attached to the locomotive boiler by a steam cock; A, the Steam Syphon; C, the steam hose to be tapped into the boiler; D, D, the suction orifices; E, the discharge hose. Steam is let on through the hose B and water is forced through the discharge hose E into the tender. No. 1 will supply the ordinary quantity of water required by a tender in 10 to 12 minutes; No. 2, in 6 to 8 minutes.

## Prices.

No. 1, with both Steam and Discharge Hose.						
Length each Hose, feet	25	30	35	40	45	50
Price, each	110.00	125.00	135.00	145.00	155.00	165.00
No. 2, with both Steam and Discharge Hose.						
Length each Hose, feet	25	30	40	50		
Price, each	145.00	155.00	180.00	200.00		

Every locomotive provided with the above appliances can be used as a fire engine, throwing water from the tender or any adjacent water.

## Description, Steam Railroad Water Station. Fig. 202.

Dispenses with tanks, tank-houses, stationary power, and attendance. Cannot freeze in any climate, under any circumstances. Costs less than one-half the price of a frost-proof tank.

The engineer in charge of the locomotive attaches the hose A to a steam valve in the boiler. Steam passes through the pipe D and slip-joint F into the globe H, producing a vacuum; the water is then lifted through the pipes II, and forced through the column E and hose C into the tender, filling any ordinary tender in about three minutes. When steam is shut off all the water in the pipe returns into the well, and any condensed steam passes off through the drip valve G, leaving nothing to freeze. The handle B serves to turn the discharge pipe and hose in any direction. The water delivered into the tender is warm, thus utilizing the steam used. The discharge tubes, represented above, made of hose, can be made of iron, if preferred.

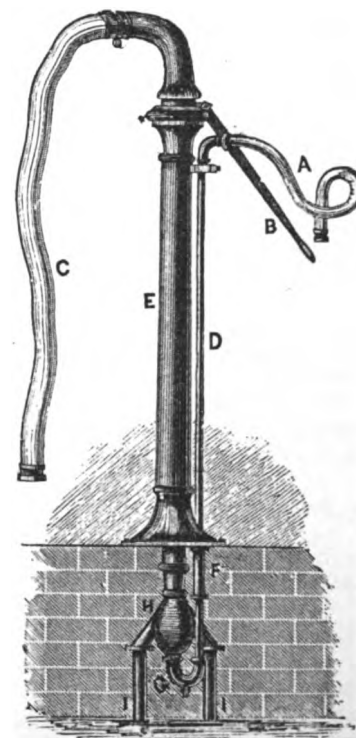


Fig. 202.

## Price.

Steam Railroad Water Station, complete, with not more than 15 ft. best steam hose, 15 ft. discharge hose, and 18 ft. of pipe below the base of the Column, each, \$350.00

## TANK VALVE, LEATHER FACED AND ELASTIC JOINT.

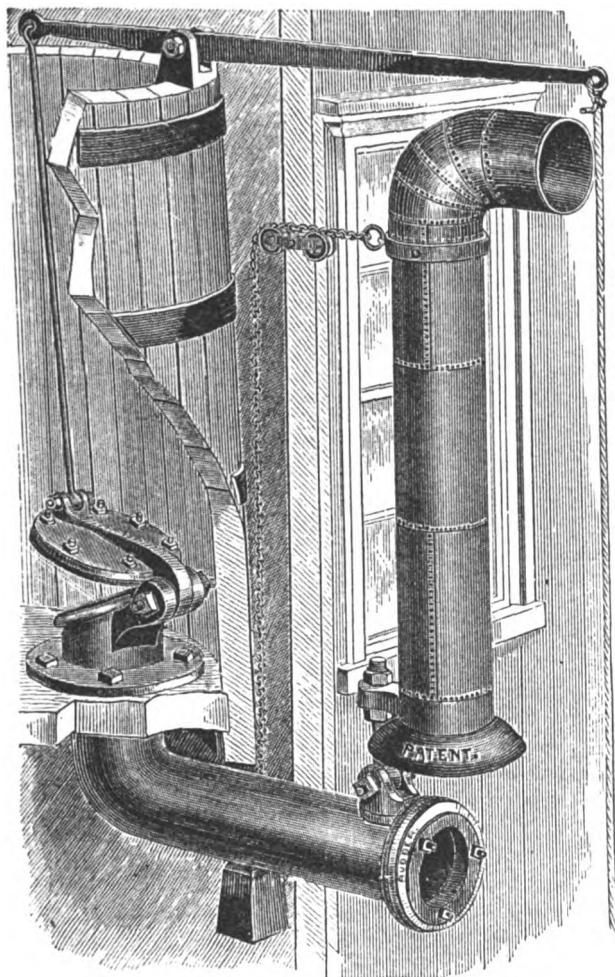


Fig. 203.

### Prices, Tank Valves, for Bottom of Tank.

Fig. 203.

6 inch Valve, complete.....	\$48.00
7 " " ".....	58.00
8 " " ".....	65.00

### Prices, Tank Valves, for Side of Tank.

Style of Fig. 203.

6 inch Valve, complete.....	\$46.00
7 " " ".....	56.00
8 " " ".....	63.00

In ordering be particular to state whether valve is wanted for bottom of Tank or for side of Tank, and give distance from the edge of Tank to center of track.

### Prices, Water Columns.

Fig. 205.

8 inch Column.....	\$250.00
6 " " ".....	225.00

In ordering Column state whether an ordinary tank pressure or a water works pressure is used, and if the latter, give the exact pressure to the square inch.

These machines have stood the test under every possible condition, and have proved absolutely perfect in their operation.

## AUTOMATIC WATER COLUMN.

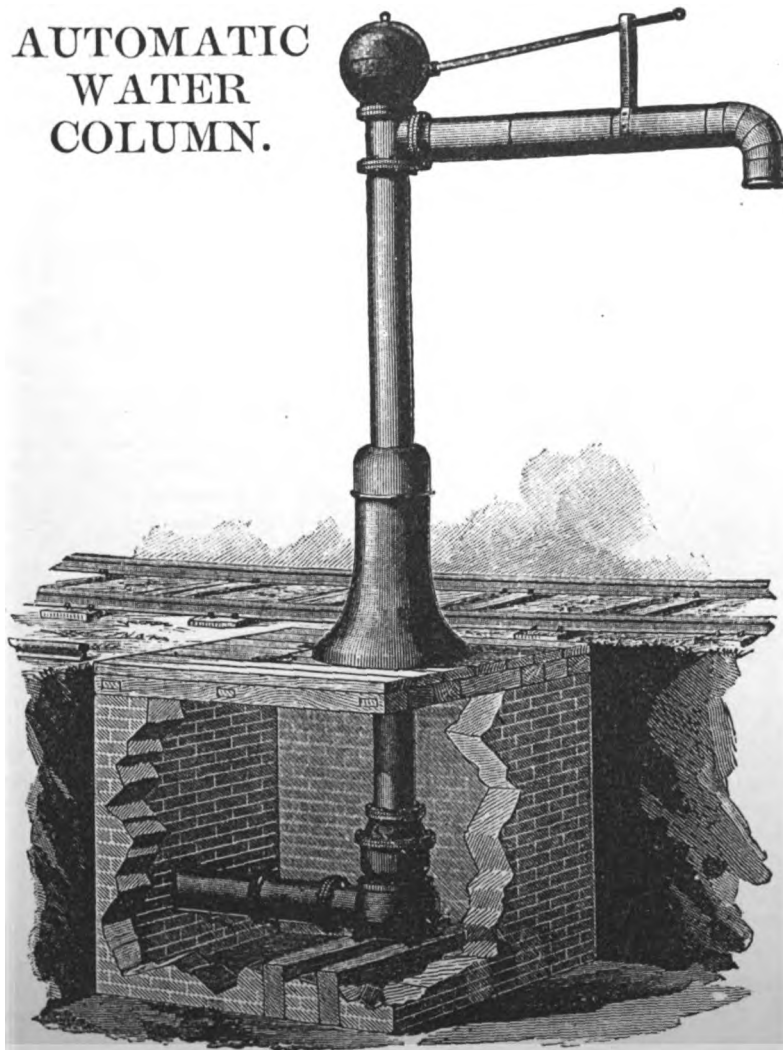


Fig. 205.

## TANK VALVE, WITH UNIVERSAL JOINT AND TELESCOPIC PIPE.

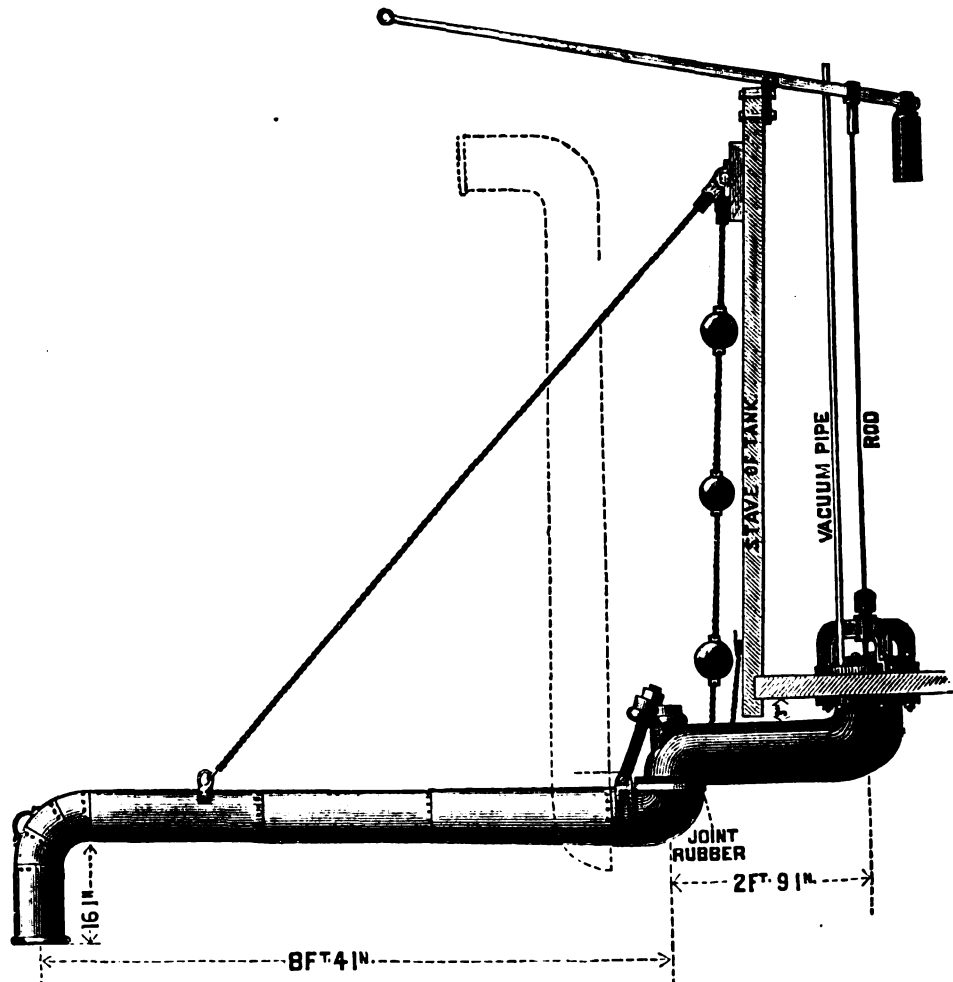


Fig. 204.

### Prices, Tank Valves, for Bottom of Tank.

Fig. 204.

Pipes 6 inches diameter.....	\$55.00
" 7 " ".....	65.00
" 8 " ".....	75.00

### Prices, Tank Valves, for Side of Tank.

Style of Fig. 204.

Pipes 6 inches diameter.....	\$55.00
" 7 " ".....	65.00
" 8 " ".....	75.00

### Prices, Tank Valves for Bottom of Tank, enclosed in Tank House.

Style Fig. 204.

Pipes 6 inches diameter.....	\$60.00
" 7 " ".....	70.00
" 8 " ".....	80.00

An order for a Tank Valve includes cast iron spout, wrought iron spout (galvanized), valve complete with bolts, rod and weights, three balls and chains, vacuum pipe, lever and fulcrum, set of sheaves, making the apparatus complete as per cut.

In ordering be particular to state whether Valve is wanted for bottom of tank, for side of tank or for enclosed tank.

**Prices Pipe and Fixtures complete, as per  
Fig. 206, except Valve.**

6 inch, for 16 feet diameter Tank.....	\$65 00
6 " " 24 " " " " " "	70 00
6 " " 30 " " " " " "	75 00
7 " " 16 " " " " " "	82 50
7 " " 20 " " " " " "	75 00
7 " " 24 " " " " " "	80 00
7 " " 30 " " " " " "	85 00
8 " " 16 " " " " " "	92 50
8 " " 20 " " " " " "	85 00
8 " " 24 " " " " " "	90 00
8 " " 30 " " " " " "	95 00
	102 00

A detailed black and white illustration of a long-barreled breech-loading rifle. The rifle is shown horizontally, with its long barrel and a complex breech mechanism at the rear. Various accessories are laid out below the rifle, including a chain, a small cylindrical container, a cleaning rod, and other small mechanical parts. The illustration is highly detailed, showing the texture of the metal and the intricate design of the breech.

**Fig. 206.**

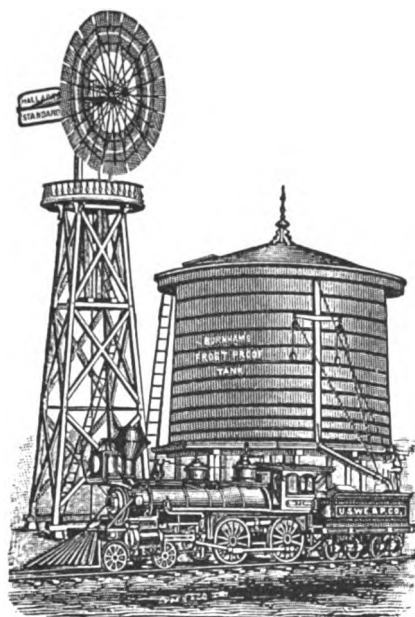
**Old Pattern.**

6 inch Pipe, Spout and Fixtures, except Valve .....	\$55.00
7   "       "       "       "       " .....	68.00
8   "       "       "       "       " .....	75.00

### Prices Tank Outlet Valves.

Size, inches.....	6	7	8
Each .....	\$12.00	15.00	18.00

## GEARED WIND MILL, FOR DRIVING MACHINERY, Etc.

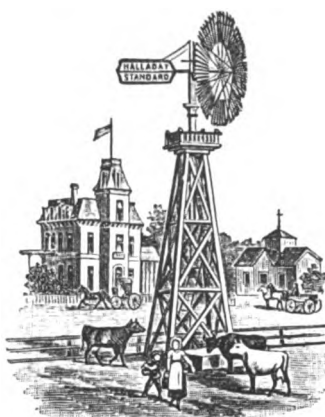


**Fig. 207.**

No.	Diameter.	Weight.	Price.
5	14 feet.	1440 pounds.	\$200 00
6	16 "	1895 "	280 00
7	18 "	2025 "	325 00
8	20 "	2820 "	375 00
8½	22 "	3500 "	425 00
9	25 "	3720 "	500 00
9½	28 "	3866 "	550 00
10	30 "		575 00

Fourth.—Height tower must be built to give the Wind Mill a free current of air.

SIZE OF TANK.			CAPACITY.		Price.
Length of Stave.	Diameter of Bottom.	Number of Hoops.	Gallons	Barrels	
12 feet.	12 feet.	9	9292	295	\$135.00
14 "	12 "	10	11026	350	150.00
10 "	16 "	8	13515	430	182.00
12 "	16 "	9	16542	525	190.00
14 "	16 "	10	19530	620	210.00
12 "	18 "	9	20917	665	215.00
16 "	18 "	11	22551	716	235.00
14 "	18 "	10	21727	785	245.00
16 "	18 "	11	28539	906	270.00
24 "	20 "	10	30555	970	295.00
18 "	20 "	11	35280	1120	325.00
18 "	22 "	12	42655	1351	380.00
18 "	22 "	14	46852	1535	425.00
18 "	24 "	13	50716	1611	410.00
18 "	24 "	14	57519	1826	480.00
16 "	30 "	14	79380	2520	640.00
18 "	30 "	15	89932	2855	685.00



**Fig. 208.**

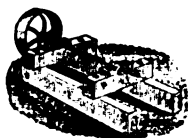
No.	Diameter.	Weight.	Price.
1	8 feet.	400 pounds.	\$90.00
1½	9 "	440 "	95.00
2	10 "	450 "	100.00
3	12 "	750 "	130.00
4	13 "	870 "	140.00
4½	14 "	975 "	160.00

**Especially adapted to Tubular Wells.**

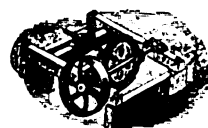
No.	Diameter.	Stroke.	Weight.	Price.
2	10 feet.	10 inches.	475 pounds.	\$105.00
3	12 "	12 "	775 "	135.00

N. B.—Prices given for Wind Mills do not include any part of the tower pump or pipe.

**FOR INCREASING SPEED.**



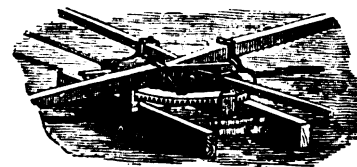
**Fig. 210.**



**Fig. 211.**

**Common Straight Jack, with Band Wheel....\$15.00**  
**Boveled Geared Jack, with Band Wheel..... 25.00**

## HORSE POWER.



**Fig. 212.**

		Weight.	Price.
No. 1, Two-horse	Single Geared,	540 lbs.....	\$55.00
" 2, "	Double "	575 lbs.....	70.00
" 3, Four-horse	Single "	850 lbs.....	70.00
" 4, "	Double "	950 lbs.....	85.00

I furnish the Levers and 10 feet of Tumbling Rod  
with each power.

### Horse Powers and Pumping Attachments.

**I manufacture a superior article in the shape of a Horse Power and Pumping Attachment, especially adapted to railway use.**

2 Horse Single Geared Power, with 10 feet Tumbling Rod.....	\$55.00
Pumping Attachment, including Bal. Wheel..	55.00



## SPIRAL SEAM RIVETED PIPE.

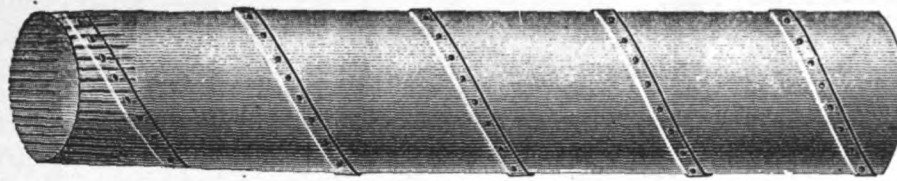


Fig. 213.

Price per Lineal Foot, with Plain or Crimped Ends or Sheet Iron Sleeves for Slip Joint Riveted on, Birmingham Wire Gauge.

## No. 14. THICKNESS, .083 INCHES.

Diam- eter in Inches.	Dipped in Black Coal Tar & Asphalt.	Gal- van- ized.	Approximate Weight per 100 feet.	Approximate Bursting Pres. in lbs. per sq. inch.
8	\$1.15	\$1.23	\$1.50	825 lbs.
9	1.32	1.41	1.70	925 "
10	1.40	1.50	1.80	1025 "
11	1.50	1.61	1.95	1125 "
12	1.80	1.92	2.35	1325 "
13	1.90	2.03	2.50	1425 "
14	2.10	2.24	2.70	1560 "
15	2.25	2.40	2.90	1680 "
16	2.40	2.56	3.15	1790 "
18	2.75	2.93	3.60	2000 "
20	3.10	3.30	4.00	2200 "
22	3.40	3.62	4.55	2400 "
24	3.70	3.94	4.85	2620 "

## No. 16. THICKNESS, .065 INCHES.

Diam- eter in Inches.	Dipped in Black Coal Tar & Asphalt.	Gal- van- ized.	Approximate Weight per 100 feet.	Approximate Bursting Pres. in lbs. per sq. inch.
6	\$0.70	\$0.76	\$1.00	500 lbs.
7	.80	.87	1.10	550 "
8	.93	1.01	1.28	650 "
9	1.08	1.17	1.47	750 "
10	1.15	1.25	1.55	800 "
11	1.20	1.31	1.70	850 "
12	1.45	1.57	2.05	1025 "
13	1.55	1.68	2.15	1100 "
14	1.70	1.84	2.40	1200 "
15	1.85	2.00	2.60	1300 "
16	2.00	2.16	2.75	1375 "
18	2.20	2.38	3.10	1550 "
20	2.45	2.65	3.40	1675 "
22	2.80	3.02	3.90	1825 "
24	3.00	3.24	4.30	2000 "

## No. 18. THICKNESS, .049 INCHES.

Diam- eter in Inches.	Dipped in Black Coal Tar & Asphalt.	Gal- van- ized.	Approximate Weight per 100 feet.	Approximate Bursting Pres. in lbs. per sq. inch.
3	\$0.34	\$0.37	\$0.46	185 lbs.
4	.42	.46	.58	245 "
5	.50	.55	.70	300 "
6	.57	.63	.85	360 "
7	.63	.70	.90	400 "
8	.73	.81	1.05	460 "
9	.82	.91	1.18	525 "
10	.90	1.00	1.30	575 "
11	.95	1.06	1.40	625 "
12	1.15	1.27	1.65	750 "
13	1.25	1.38	1.80	800 "
14	1.35	1.49	1.95	900 "
15	1.50	1.65	2.10	950 "
16	1.60	1.76	2.25	1000 "
18	1.75	1.93	2.55	1125 "
20	2.00	2.20	2.90	1250 "
22	2.20	2.42	3.10	1350 "
24	2.40	2.61	3.35	1460 "

## No. 20. THICKNESS, .035 INCHES.

Diam- eter in Inches.	Dipped in Black Coal Tar & Asphalt.	Gal- van- ized.	Approximate Weight per 100 feet.	Approximate Bursting Pres. in lbs. per sq. inch.
3	\$0.27	\$0.30	\$0.38	150 lbs.
4	.35	.39	.48	200 "
5	.40	.45	.60	250 "
6	.46	.52	.68	300 "
7	.51	.58	.75	325 "
8	.58	.66	.85	360 "
9	.66	.75	.97	410 "
10	.72	.82	1.05	500 "
11	.78	.89	1.20	550 "
12	.90	1.02	1.35	600 "
13	1.00	1.13	1.50	650 "
14	1.10	1.24	1.60	700 "
15	1.20	1.35	1.75	750 "
16	1.30	1.46	1.85	800 "
18	1.40	1.58	2.05	900 "
20	1.60	1.80	2.30	960 "
22	1.80	2.02	2.55	1040 "
24	1.95	2.19	2.85	1150 "

## No. 22. THICKNESS, .028 INCHES.

Diameter in Inches.	Black.	Dipped in Coal Tar & Asphalt.	Galvanized	Approximate Weight per 100 feet.
3	\$0.24	\$0.27	\$0.32	130 lbs.
4	.30	.34	.43	160 "
5	.37	.42	.53	200 "
6	.40	.46	.60	240 "
7	.45	.52	.65	260 "
8	.53	.61	.75	300 "
9	.60	.69	.90	340 "
10	.65	.75	1.00	380 "
11	.70	.81	1.10	420 "
12	.82	.94	1.25	490 "
13	.90	1.03	1.35	530 "
14	1.00	1.11	1.45	575 "

## No. 24. THICKNESS, .022 INCHES.

Diameter in Inches.	Black	Dipped in Coal Tar & Asphalt.	Galvanized	Approximate Weight per 100 feet
3	\$0.20	\$0.23	\$0.30	100 lbs.
4	.25	.29	.38	130 "
5	.30	.35	.45	160 "
6	.33	.39	.50	185 "
7	.37	.44	.55	210 "
8	.42	.50	.65	240 "
9	.48	.57	.75	280 "
10	.54	.64	.85	300 "
11	.60	.71	.90	330 "
12	.68	.80	1.05	400 "

## No. 26. THICKNESS, .018 INCHES.

Diameter.	Black.	Dipped in Coal Tar and Asphalt.	Galvanized.
3 inch.	\$0.17	\$0.20	\$0.25
4 "	.21	.25	.33
5 "	.25	.30	.40
6 "	.28	.34	.46

All of the above in lengths of 20 feet and under. Each length tested to service required. In ordering pipe the margin of safety should be at least one-half or two-thirds of the bursting pressure.

## Light Galvanized Riveted House Leader, Ventilating, Air and Blow Pipe.

Fig. 224.

Inside Diameter.	Per Foot.	Inside Diameter.	Per Foot
2 inch.	\$0.14	4 inch.	\$0.25
2½ "	.17	5 "	.30
3 "	.19	6 "	.38
3½ "	.21		

Made in lengths of 10 feet or less.

## SPIRAL SEAM RIVETED PIPE FOR HYDRAULIC MINING AND ENGINEERING AND CITY WATER WORKS.

## SPIRAL SEAM PIPE WITH LUGS FOR WIRING.

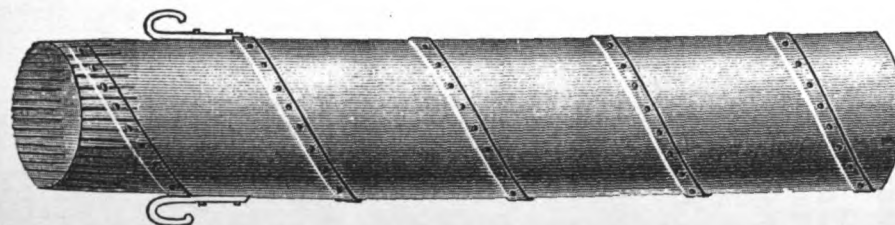


Fig. 214.

Furnished with flanges or slip joint and hooks for wiring or sleeve and nipple connections. In the latter, provision is made for tapping service pipes to the water mains. Made of galvanized or black sheet iron, of all gauges and diameters, or dipped in coal tar and asphalt at a temperature of 300°.

Diameter of Pipe, Inches.	Gauge of Iron, Number.	Pounds per Square Inch.
12	16	450
8	18	490
6	18	650
4	20	750
3	20	900

## SPIRAL SEAM RIVETED PIPE AND FITTINGS.

### DOUBLE GALVANIZED, SPIRAL RIVETED, FLANGED PRESSURE PIPE.

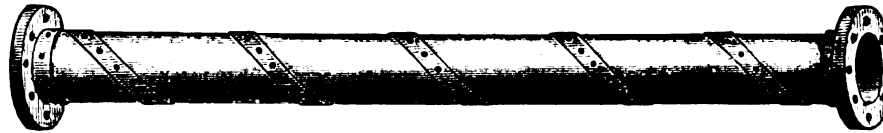


Fig. 215.

Made of galvanized iron and regalvanized after formation, thereby making all seams and laps perfectly solid. Each length tested to 150 pounds, hydraulic pressure, suitable for exhaust steam, exhaust steam heating, pump suction, pump columns, compressed air, refrigerating pipe, etc.

#### FLANGED PIPE, PER LINEAL FOOT.

Inside Diameter.	Price Per Foot.	Thickness, W. G.	Nominal Weight, Per Foot.	Inside Diameter.	Price Per Foot.	Thickness, W. G.	Nominal Weight, Per Foot.
3 in.	\$0.50	No. 20	2 1/4 lbs.	11 in.	\$2.85	No. 16	12 lbs.
4 "	0.70	"	3 "	12 "	3.15	"	14 "
5 "	1.00	"	4 "	13 "	3.60	"	15 "
6 "	1.20	No. 18	5 "	14 "	4.00	No. 14	20 "
7 "	1.40	"	6 "	15 "	4.40	"	22 "
8 "	1.70	"	7 "	16 "	5.15	"	24 "
9 "	2.00	"	8 "	18 "	6.40	"	29 "
10 "	2.60	No. 16	11 "	20 "	7.95	"	34 "

In lengths of 20 feet or less.

Pipe and Fittings gotten out to specifications and drawings without extra charge, except where lengths required are all 5 feet or less, in which case all lengths are charged as being 5 feet.

### CAST AND WROUGHT IRON FITTINGS FOR FLANGED SPIRAL PIPE.

ELBOW.



Fig. 216.

CROSS.

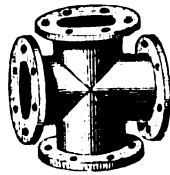


Fig. 217.

TEE.

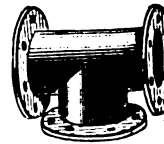


Fig. 218.

REDUCER.



Fig. 219.

#### Prices Fittings, each.

##### BLACK.

Inside Diameter.	Elbows.	Tees.	Crosses.	Reducers.	Flanges.	Disks or Blind Flanges.	Bolts and Nuts.	Comp'tion Gaskets.
3 in.	\$ 1.25	\$ 1.95	\$ 3.00	\$.....	\$0.24	\$0.28	\$0.02 1/2	\$0.09
4 "	1.50	2.20	3.70	*2.00	.32	.40	.02 1/2	.10
5 "	2.00	3.10	4.80	*2.40	.40	.48	.02 1/2	.12
6 "	2.90	3.90	5.70	*3.25	.48	.72	.03	.16
7 "	3.50	5.00	7.70	*4.00	.64	.96	.03	.18
8 "	4.50	6.60	9.80	*4.75	.72	1.12	.03	.23
9 "	6.20	9.25	13.00	*5.50	.96	1.44	.03	.31
10 "	6.80	11.50	16.50	*7.00	1.12	1.62	.03	.40
11 "	*8.75	*14.00	*19.00	*8.00	1.20	2.00	.03	.45
12 "	10.50	15.00	21.00	*9.00	1.28	2.40	.03	.50
13 "	12.00	*16.50	*24.00	*9.75	1.44	2.80	.03	.56
14 "	*13.50	*18.60	*27.00	*11.00	1.60	3.36	.03 1/2	.63
15 "	15.00	*22.00	*31.00	*12.25	1.92	3.68	.03 1/2	.75
16 "	*17.00	*25.00	*34.50	*14.20	2.72	4.16	.03 1/2	.90
18 "	*20.00	*29.00	*39.00	*17.40	3.12	5.60	.03 1/2	1.08
20 "	*23.00	*34.00	*45.00	*19.60	3.44	7.20	.03 1/2	1.25

##### GALVANIZED.

Inside Diameter.	Elbows.	Tees.	Crosses.	Reducers.	Flanges.	Disks or Blind Flanges.	Bolts and Nuts.	Comp'tion Gaskets.
3 in.	\$ 1.60	\$ 2.75	\$ 4.15	\$.....	\$ 0.30	\$ 0.45	\$0.04	\$0.09
4 "	2.10	3.25	5.30	*3.00	.52	.65	.04	.10
5 "	2.85	4.40	6.70	*3.50	.65	.78	.04	.12
6 "	4.10	5.70	8.00	*4.75	.78	1.17	.04 1/2	.16
7 "	5.10	7.30	11.00	*5.50	1.04	1.56	.04 1/2	.18
8 "	6.70	9.80	14.25	*6.50	1.17	1.82	.04 1/2	.23
9 "	9.00	13.80	18.80	*8.00	1.56	2.34	.04 1/2	.31
10 "	10.00	17.60	24.50	*10.25	1.82	2.47	.04 1/2	.40
11 "	*13.00	*20.00	*26.50	*12.00	1.95	3.25	.04 1/2	.45
12 "	15.80	22.50	30.00	*13.00	2.08	3.90	.04 1/2	.50
13 "	19.15	*25.00	*33.50	*14.60	2.34	4.55	.04 1/2	.56
14 "	*22.30	*30.50	*38.00	*16.50	2.60	5.46	.05	.63
15 "	26.00	*37.00	*45.00	*18.40	3.12	5.98	.05	.75
16 "	*30.00	*44.00	*53.00	*21.30	4.42	6.76	.05	.90
18 "	*34.00	*50.00	*59.00	*26.00	5.07	9.10	.05	1.08
20 "	*38.50	*56.00	*67.00	*29.40	6.59	11.70	.05	1.25

\* All Fittings marked thus are riveted sheet iron, all others are cast iron.

Fittings of any Design Made to Order. The Disks can be Tapped to Suit Wrought Iron Pipe if Required.

### ORDINARY FLANGES,

AND ATTACHING SAME TO

#### BLACK OR GALVANIZED PIPE OR FITTINGS.

Diameter, Inches.	Price, Black—for 1 Flange.	Price, Galvanized—for 1 Flange.
3	\$0.30	\$0.45
4	.40	.60
5	.50	.75
6	.60	.90
7	.80	1.20
8	.90	1.35
9	1.20	1.80
10	1.40	2.10
11	1.50	2.25
12	1.60	2.40
13	1.80	2.70
14	2.00	3.00
15	2.40	3.60
16	3.40	5.10
18	3.90	5.75
20	4.30	6.45

### LOOSE FLANGES FOR CAULKING ON PIPE.



Fig. 220.

Diameter, Inches.	Approximate Weight.	Price, Each.	Diameter, Inches.	Approximate Weight.	Price, Each.
3	7.20 lbs.	\$0.50	11	36.00 lbs.	\$2.50
4	9.60 "	.65	12	38.40 "	2.70
5	12.00 "	.85	13	43.20 "	3.00
6	14.40 "	1.00	14	48.00 "	3.40
7	19.20 "	1.35	15	57.60 "	4.00
8	20.40 "	1.50	16	81.60 "	5.60
9	28.80 "	2.00	18	94.00 "	6.50
10	33.60 "	2.35	20	103.20 "	7.20

### STRAIGHT SEAM PUNCHED AND ROLLED SHEETS.

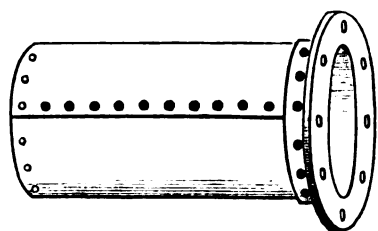


Fig. 221.

### PACKED FOR SHIPMENT.

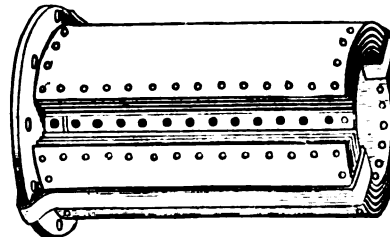


Fig. 222.

### Prices, Punched and Formed Sheets.

#### BLACK.

No. 10 to 14, W. G.	per lb., \$0.07
No. 15 to 17, W. G.	“ .07 <sup>1</sup> / <sub>2</sub>
No. 18 to 20, W. G.	“ .08
No. 21 to 24, W. G.	“ .08 <sup>1</sup> / <sub>2</sub>

#### GALVANIZED.

No. 10 to 14, W. G.	per lb., \$0.10
No. 15 to 17, W. G.	“ .11
No. 18 to 20, W. G.	“ .12
No. 20 to 24, W. G.	“ .13

### Prices, Wrought Iron Lugs for Slip Joints.

Black	Each, \$0.12	Galvanized	Each, \$0.15
-------	--------------	------------	--------------

### Prices, Sheets and Fittings, Coated with Coal Tar and Asphalt at a Temperature of 300°.

#### Punched and Formed Sheets.

<sup>1</sup>/<sub>2</sub> cent for each inch of diameter per lineal foot, net.

#### Fittings—Elbows, Tees, Crosses, Etc.

No. 16 and heavier	per lb., net, \$0.01
No. 18 and lighter	“ .01 <sup>1</sup> / <sub>2</sub>

### STRAIGHT SEAM RIVETED PIPE AND FITTINGS.

Made of Heavy Gauges of Black and Galvanized Sheet Iron, suitable for Water, Blower, Air, Ventilator Pipe and Smoke Stacks.

#### BLACK.

No. 12 to 14, W. G.	per lb., \$0.08
No. 15 to 17, W. G.	“ .09
No. 18 to 20, W. G.	“ .10
No. 21 to 24, W. G.	“ .11

#### GALVANIZED.

No. 12 to 14, W. G.	per lb., \$0.11
No. 15 to 17, W. G.	“ .12
No. 18 to 20, W. G.	“ .14
No. 21 to 24, W. G.	“ .16

### Prices Fittings, Elbows, Tees, Crosses, etc.

No. 12 to 14, W. G.	per lb., \$0.17	No. 12 to 14, W. G.	per lb., \$0.20
No. 15 to 17, W. G.	“ .18	No. 15 to 17, W. G.	“ .21
No. 18 to 20, W. G.	“ .20	No. 18 to 20, W. G.	“ .24
No. 21 to 24, W. G.	“ .25	No. 21 to 24, W. G.	“ .30

### Prices, Wrought Iron Lugs for Slip Joints.

Black	Each, \$0.12	Galvanized	Each, \$0.15
-------	--------------	------------	--------------

### Prices, Pipe and Fittings coated with Coal Tar and Asphalt at 300° temperature.

#### PIPE.

<sup>1</sup>/<sub>2</sub> cent for each inch of diameter per lineal foot.

#### FITTINGS.

No. 16, W. G., and heavier	per lb., net, \$0.01
No. 17, W. G., and lighter	“ .01 <sup>1</sup> / <sub>2</sub>

Pipe and Fittings gotten out to drawings, and specifications and estimates furnished.

### CAST IRON LEADER PIPE SHOE.

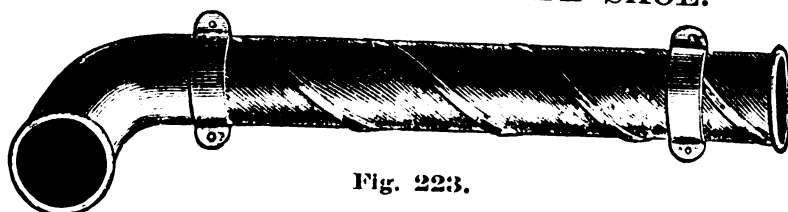


Fig. 223.

Inside Diameter, inches	3	4	5	6
Price, each	\$3.50	4.00	5.00	6.00

### SPIRAL SEAM RIVETED LEADER PIPE.

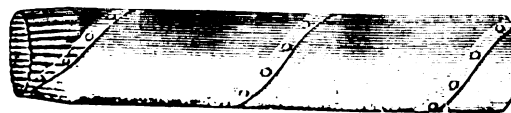


Fig. 224.

#### Galvanized Iron.

For sizes and prices see page 38.

### CAST IRON SOIL, WATER AND SMOKE PIPE.

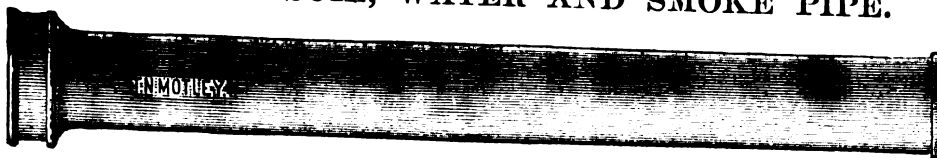


Fig. 225.

### Price per Foot, Single Hub Pipe.

Diameter, inches	2	3	4	5	6	7	8	10	12	15
Lengths, feet	5	5	5	5	5	5	5	5	5	5
Regular weight	\$0.21	.30	.36	.50	.60	1.00	1.25	2.00	3.00	4.50
Extra heavy	.35	.55	.75	1.00	1.20	1.75	2.25	3.00	4.00	

### Price per Foot, Double Hub Pipe.

Diameter, inches	2	3	4	5	6	7	8
Lengths, feet	5	5	5	5	5	5	5
Regular weight	\$0.30	.36	.42	.56	.66	1.15	1.45
Extra heavy	.41	.61	.81	1.06	1.26	1.95	2.55

### ENAMELING PIPE AND FITTINGS.

#### Net Price per Length, Enameling Pipe.

Diameter, inches	2	3	4	5	6
Per length	\$1.40	1.50	1.60	1.70	1.80

Lengths of Pipe given above do not include the Hub, consequently the pipe measures 5 or 6 feet when laid down. Double Hub Pipe will be found very convenient, and a great saving when short pieces are required.

#### Net Price Each, Enameling Fittings.

Sizes, inches	2	3	4	5	6
Each	\$0.50	.60	.75	.85	1.00

# FITTINGS FOR CAST IRON PIPE.

EIGHTH BEND.

SIXTH BEND.

QUARTER BEND.

QUARTER BEND, DOUBLE HUB.

RETURN BEND.

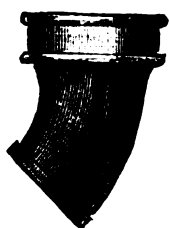


Fig. 226.

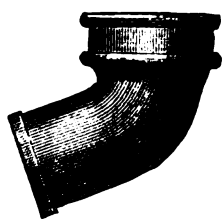


Fig. 227.

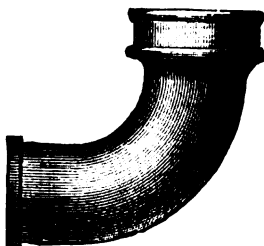


Fig. 228.

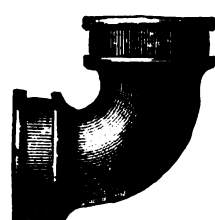


Fig. 229.

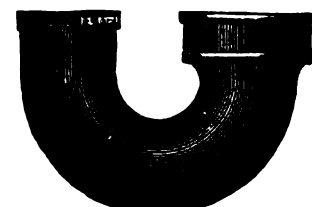


Fig. 230.

Sizes, inches.....	2	3	4	5	6	7	8	10	12	15
Eighth Bends, Fig. 226.....	Each \$0.35	.45	.60	.90	1.05	2.00	2.75	3.75	5.50	9.00
" Extra heavy.....		.45	.65	1.00	1.20	1.40	2.75	3.75	5.00	7.50
" Double Hub.....				.80						
" ex. hvy.....				1.30						
Sixth Bends, Fig. 227.....		.40	.55	.65	1.00	1.20	3.00			
" Extra heavy.....		.50	.70	1.10	1.35	1.75	4.00			
Quarter Bends, Fig. 228.....		.40	.55	.65	1.00	1.20	2.25	3.00	4.00	6.00
" Extra heavy.....								4.00	6.00	10.00

Sizes, inches.....	2	3	4	5	6	7	8	10
Quarter Bends, extra heavy.....	Each \$0.50	.70	1.10	1.35	1.75	3.00	4.00	5.00
" Dble Hub, Fig. 229.....		.70	.85	.95	1.30	1.50		
" ex. heavy.....		.80	1.00	1.40	1.65	2.05		
Return Bends, Fig. 230.....		.65	.85	1.25	2.00	3.00		
" Extra heavy.....		.75	1.10	1.75	2.50	3.50		
Long Bends, 18 inches in the clear.....				1.50	2.25	2.50	5.50	
" ex. heavy.....				2.25	2.75	3.25		

HALF Y BRANCH.

Y BRANCH.

DOUBLE Y BRANCH.

T BRANCH.

CROSS HEAD BRANCH.

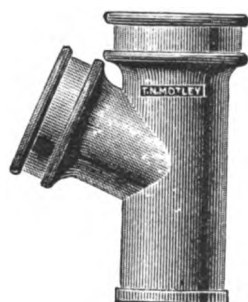


Fig. 231.



Fig. 232.

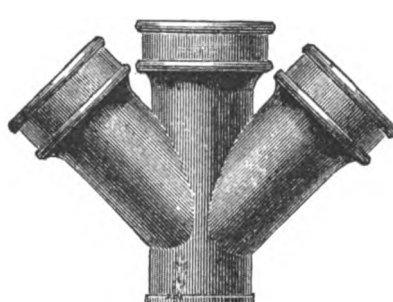


Fig. 233.

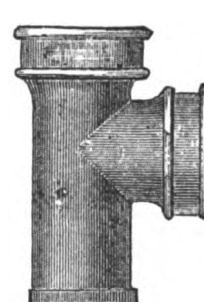


Fig. 234.

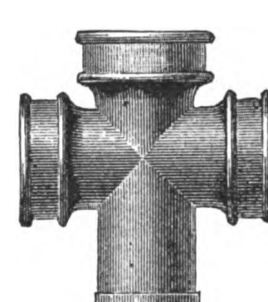


Fig. 235.

Outlet, inches.....	2x2	3x3 to 3x2	4x4 to 4x2	5x5 to 5x2	6x6 to 6x2	8x8 to 8x2
Half Y Branches, Fig. 231.....	Each \$0.60	.80	1.20	1.60	2.00	5.00
" extra heavy.....		.80	1.25	1.60	2.25	7.50
Double Half Y Branches.....		1.00	1.25	1.65	2.25	3.00
" ex. heavy.....		1.25	1.60	1.90	3.00	4.00
Outlet, inches.....	4x4 to 4x2	5x4 to 5x2	6x4 to 6x2	8x4 to 8x2	10x4 to 10x2	12x4 to 12x2
Long T Branches, Fig. 234.....	Each \$2.00	2.75	3.50	2.50	3.50	4.50
" extra heavy.....		3.00	4.00	5.00	3.75	5.00

Outlet, inches.....	2x2	3x3 to 3x2	4x4 to 4x2	5x5 to 5x2	6x6 to 6x2	7x7 to 7x2	8x8 to 8x2	10x10 to 10x2	12x12 to 12x2	15x15 to 15x2
Y Branches, Fig. 232.....	Each \$0.60	.80	1.20	1.60	2.00	4.00	5.00	7.00	12.00	22.00
" extra heavy.....		.80	1.25	1.60	2.25	3.25	6.00	7.50	11.00	16.00
Double Y Branches, Fig. 233.....		1.00	1.25	1.65	2.25	3.00	5.50	6.00	9.00	
" extra heavy.....		1.25	1.60	1.90	3.00	4.00	7.00	9.00	14.00	
T Branches, Fig. 234.....		.40	.55	.65	1.20	1.40	2.75	3.25	6.50	10.00
" extra heavy.....		.60	.80	1.20	1.50	1.90	4.25	5.50	9.00	14.00
Cross Head Branches, Fig. 235.....		.80	1.10	1.25	1.60	2.50	4.00	5.00	8.00	14.00
" ex. heavy.....		1.00	1.40	1.75	2.00	3.25	6.00	7.00	11.00	18.00

QUARTER BEND, with Outlet on Hub or Side.

OFFSET.

STRAIGHT SLEEVE.

OFFSET, with Outlet.

REDUCING PIECE.

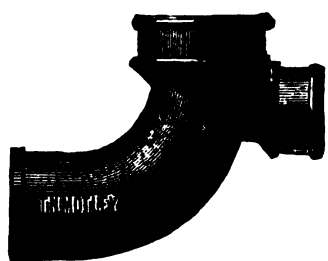


Fig. 236.

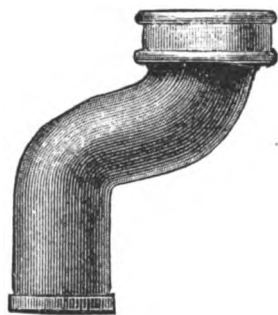


Fig. 237.



Fig. 238.

Stopper or Plug.



Fig. 239.



Fig. 240.



Fig. 241.

Outlet, inches.....	2x2	3x2	4x2	5x2	6x2	8x2	10x2	12x2
With Outlet on hub or side, Fig. 236.....	Each \$0.75	.85	1.00	1.20	1.40	1.60	1.75	2.00
" extra heavy.....		.80	1.00	1.20	1.40	1.60	1.75	2.00
BANDS.....	2x2	3x2	4x2	5x2	6x2	8x2	10x2	12x2
Outlet, inches.....	2x2	3x2	4x2	5x2	6x2	8x2	10x2	12x2
With Outlet, Fig. 236.....	Each \$0.75	.90	1.10	1.40	1.70	2.00	2.25	2.50
" extra heavy.....		1.20	1.75	2.00	2.75	3.00	3.50	4.00

OFFSETS.																														
Offset, inches.....	2x2	2x4	2x6	2x8	2x12	3x4	3x6	3x8	3x12	4x4	4x6	4x10	4x12	4x14	4x16	4x20	4x4	4x8	4x12	4x16	4x20	4x4	4x8	4x12	4x16	4x20	4x4	4x8	4x12	
Regular, Fig. 237.....	Each,	\$0.40	.50	.70	1.00	1.25	1.10	1.25	1.40	1.25	1.40	1.60	1.80	2.00	2.25	2.50	1.80	2.00	2.25	2.50	2.75	1.80	2.00	2.25	2.50	2.75	1.80	2.00	2.25	
Extra heavy.....		.60	.80	1.00	1.10	1.25	1.10	1.25	1.40	1.25	1.40	1.60	1.80	2.00	2.25	2.50	1.80	2.00	2.25	2.50	2.75	1.80	2.00	2.25	2.50	2.75	1.80	2.00	2.25	
With 2 inch outlets, Fig. 240.....	"	"	"	"	"	"	"	"	"	1.15	1.30	1.45	1.60	1.75	1.90	2.10	1.50	1.65	1.80	1.95	2.10	1.50	1.65	1.80	1.95	2.10	1.50	1.65	1.80	
" " extra heavy.....	"	"	"	"	"	"	"	"	"	1.65	1.70	1.80	1.90	2.10	2.30	2.50	2.30	2.40	2.50	2.60	2.70	2.30	2.40	2.50	2.60	2.70	2.30	2.40	2.50	
Boat Tub Connection.....	Size, 3 inch	Each.....	\$1.00							Size, inches.....	2 to 3	3 to 4	4 to 6	5 to 7	6 to 8	8 to 9														
											Each.....	\$0.70	1.25	1.40	1.75	2.00														
										" extra heavy.....	"	1.00	1.25	1.75	2.25	2.75														



# FITTINGS FOR CAST IRON PIPE.

THIMBLE.



Fig. 247.

THIMBLE, WITH COVER.



Fig. 248.

ROOF IRON.



Fig. 249.

T.

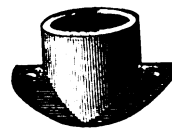


Fig. 250.

SADDLE HUBS.

HALF Y.



Fig. 251.

Y.



Fig. 252.

Sizes, inches.....	2	3	4	5	6	8	10
Thimbles, Fig. 247.....	each, \$0.15	0.25	0.30	0.35	0.45		
" Galvanized, Fig. 247.....		.25	.40	.50	.75		
Thimbles with Covers, Fig. 248.....			.60	.70	.90	2.25	5.00

Outlets, inches.....	2x2	3x3	4x4	5x5	6x6	7x7	8x8	10x10	12x12
		to	to	to	to	to	to	to	to
T Saddle Hubs, Fig. 250 each, \$0.30	3x2	4x2	5x2	6x2	7x2	8x2	10x4	12x4	
" " ex. heavy, " .40	0.50	0.60	0.75	1.10	1.40	1.50	2.25	4.00	
1/2 Y Saddle Hubs Fig. 251, " .35	.55	.70	.90	1.25	2.00	2.25	3.25	6.00	

Sizes, inches.....	2	3	4	5	6
Roof Irons, Fig. 249.....	each, \$0.90	1.15	1.30	1.50	1.80
Ventilating Caps.....		.40	.80	1.10	1.50
Ventilating Caps, Galvanized.....		.80	1.20	1.60	2.75

Outlets, inches.....	2x2	3x3	4x4	5x5	6x6	8x6	12x5
		to	to	to	to	to	to
Half Y Saddle Hubs, ex. heavy, Fig. 251, each, \$0.45	3x2	4x2	5x2	6x2			
Y Saddle Hubs, Fig. 252.....	.35	.55	.70	.90	1.25	2.00	4.50
" " ex. heavy, Fig. 252.....	.45	.70	.90	1.15	1.55	3.00	6.50

## IRON TRAPS.

S TRAP.

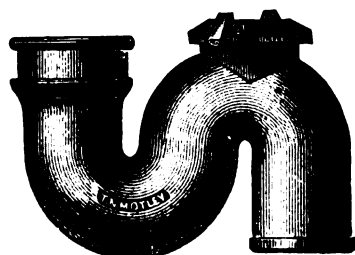


Fig. 253.

HALF S TRAP.

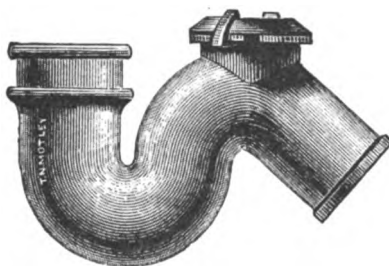


Fig. 254.

THREE-QUARTER S TRAP.

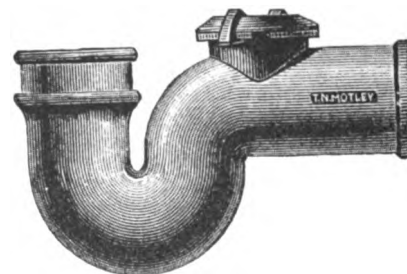


Fig. 255.

**S TRAPS.**

Sizes, inches.....	2	3	4	5	6
Regular.....	\$0.80	1.25	1.50	3.00	3.75
Extra Heavy.....	1.25	1.75	2.50	4.00	5.00

Add, if with 2 in. vent, 0.50 each.

**HALF S TRAPS.**

Sizes, inches.....	2	3	4	5	6
Regular.....	\$0.80	1.25	1.50	3.00	3.75
Extra Heavy.....	1.25	1.75	2.50	4.00	5.00

Add, if with 2 in. vent, 0.50 each.

**THREE-QUARTER S TRAPS.**

Sizes, inches.....	2	3	4	5
Regular.....	\$0.80	1.25	1.50	3.00
Extra Heavy.....	1.25	1.75	2.50	4.00

Add, if with 2 in. vent, 0.50 each.

**TRAPS WITHOUT HAND OPENINGS.**

S Trap..... 4 inch.	Half S Trap..... 4 inch.	Three-quarter S Trap..... 4 inch.
Regular..... \$1.50	Regular..... \$1.50	Regular..... \$1.50
Extra Heavy..... 2.50	Extra Heavy..... 2.50	Extra Heavy..... 2.50

**TRAPS WITH OUTLETS IN HEEL OR SIDE.**

S Trap..... 4 inch.	Half S Trap..... 4 inch.	Three-quarter S Trap..... 4 inch.
Regular..... \$2.00	Regular..... \$2.00	Regular..... \$2.00
Extra Heavy..... 3.00	Extra Heavy..... 3.00	Extra Heavy..... 3.00

## THE "DU BOIS" LEAD TRAPS.

S.

3/4 S.

1/2 S.

RUNNING.

RUNNING Y.

BAG. SHORT BEND.

LONG BEND.



Fig. 256.



Fig. 257.



Fig. 258.



Fig. 259.



Fig. 260.



Fig. 261.



Fig. 262.



Fig. 263.

**Standard Weight, 6 lbs. Lead.**

Sizes, inches.....	1 1/4	1 1/2	2	3	4	4 1/2
S Traps, Fig. 256.....	each, \$0.65	0.80	1.10	1.70	2.20	3.25
Three-quarter S Traps, Fig. 257.....		.65	.80	1.10	1.70	2.20
Half S Traps, Fig. 258.....		.55	.70	1.00	1.35	1.70
Running Traps, Fig. 259.....		.60	.75	1.05	1.50	1.85

Special, 5 1/2 lbs.

4 in.

**Standard Weight, 6 lbs. Lead.**

Sizes, inches.....	1 1/4	1 1/2	2	3	4	4 1/2
Running Y Traps, Fig. 260, each, \$0.65	0.80	1.10	1.70	2.20	3.25	
Bag Traps, Fig. 261.....		1.25	1.60	2.00	3.40	5.00
Short Bends, Fig. 262.....		.30	.40	.45	.75	.80
Long Bends, Fig. 263.....		.40	.45	.55	1.00	1.35

Above prices include Brass Drain Screws, except 4 and 4 1/2 inch.

## LEAD PIPE.

### Weights per foot for both Lead Pipe and Tin Lined.

Inside Diam.	AAA	AA	A	B	C	D	D Light	E	E Light
Inches.	lbs.	oz.	lbs.	oz.	lbs.	oz.	lbs.	oz.	lbs.
3/4	1	8	1	5	1	2	1	0	0
1	3	0	2	0	1	12	1	4	1
1 1/4	3	8	2	12	2	8	2	0	13
1 1/2	4	8	3	8	3	0	2	4	12
2	6	0	4	12	4	0	3	4	10
2 1/4	6	12	5	12	4	12	3	8	8
2 1/2	9	0	8	0	6	4	5	0	4
3	10	12	9	0	7	0	6	0	5

\* Those marked with a \* are the right sizes and strength for suction pipe.  
† Those marked with a † are not made in Tin Lined Lead Pipe.

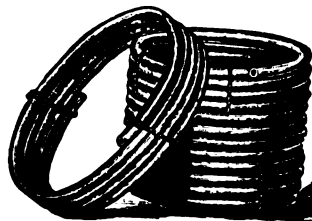


Fig. 264.

Special Prices on application

### SHEET LEAD.

Special Prices on application

### Weights per foot Lead Tubing and Lead Waste Pipe.

#### LEAD TUBING.

1/2 inch.....	2 oz. per foot.	1/4 inch.....	5 oz. per ft.
---------------	-----------------	---------------	---------------

#### LEAD WASTE PIPE.

1 1/2 inch, 2 lbs. per ft.	4 inch, 4 1/2, 5, 6, & 8 lbs. per ft.
2 " 3 " "	6, 6 1/4, & 8 " "
2 1/2 " 4 & 6 " "	5 " 8, 10 & 12 " "
3 " 3 1/2, 4 1/2 & 5 " "	0 " 9 3/4 lbs. and up " "

#### Weight per square foot Sheet Lead.

Weight per sq. ft. 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 6, 7, 8, 9, 10 lbs. and up.	1-10 in. th'k, wgt 4 lbs. per sq. ft.	3-16 in. th'k, wgt 11 lbs. per sq. ft.
1/8 " 7 1/2 " "	1/4 " 14 " "	1/2 " 15 " "

Sheet Lead rolled to any other weight per square foot to order.

PLAIN AND HOSE BIBBS.—BRASS.

PLAIN BIBB,  
Screw'd for Wood.

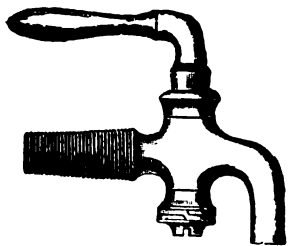


Fig. 265.

PLAIN BIBB,  
Sc'w'd for Iron Pipe, with Shoulder.

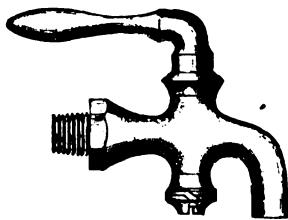


Fig. 266.

HOSE BIBB,  
Sc'w'd for Iron Pipe, with Shoulder.

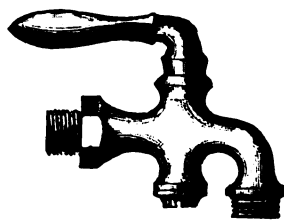


Fig. 267.

HOSE BIBB,  
With Flange and Thimble.

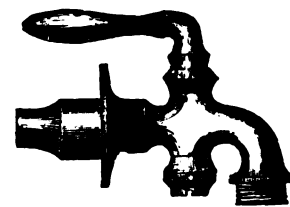


Fig. 268.

Sizes, inches.	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/2	3
Plain Bibbs, Tinned Shank, Rough.....	per dozen, \$ 9.00	11.00	14.00	16.00	21.00	32.00	52.00	72.00	120.00	150.00	230.00	300.00
" " " " Finished.....	10.00	12.00	15.00	18.00	24.00	36.00	60.00	84.00	130.00	170.00	270.00	360.00
" " " " Screw'd for Wood, Rough.....	10.00	12.50	16.00	18.00	24.00	37.00	60.00	82.00	130.00	175.00	270.00	360.00
" " " " " " Finished.....	11.00	13.50	17.00	20.00	27.00	41.00	68.00	94.00	160.00	250.00	350.00	410.00
" " " " " " Screw'd for Iron Pipe with Shoulder, Rough.....	10.00	12.00	15.00	17.00	23.00	35.00	56.00	78.00	130.00	180.00	290.00	380.00
" " " " " " " " Finished.....	11.00	13.00	16.00	19.00	26.00	39.00	64.00	90.00	140.00	190.00	310.00	400.00
" " " " " " " " with Flange and Thimble, Finished.....		19.00	24.00	28.00	40.00	53.00	56.00	78.00	130.00	160.00	250.00	300.00
" " " " " " " " Tinned Shank, Rough.....			15.00	17.00	23.00	35.00	56.00	78.00	130.00	180.00	290.00	380.00
" " " " " " " " " " Finished.....			16.00	19.00	26.00	39.00	64.00	90.00	140.00	190.00	310.00	400.00
" " " " " " " " " " Screw'd for Iron Pipe with Shoulder, Rough.....			16.00	18.00	25.00	38.00	60.00	84.00	140.00	190.00	310.00	400.00
" " " " " " " " " " " " Finished.....			17.00	20.00	28.00	42.00	68.00	96.00	150.00	200.00	320.00	410.00
" " " " " " " " " " " " with Flange and Thimble, Finished.....			25.00	29.00	42.00	56.00						

COMPRESSION PLAIN AND HOSE BIBBS.  
BRASS.

PLAIN BIBB.

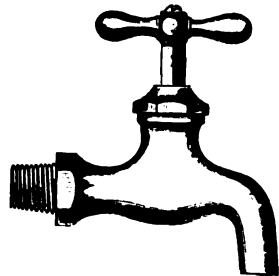


Fig. 269.

Screw'd for Iron Pipe, with Shoulder.

Sizes, inches.	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	2
Plain Bibbs, Rough.....	per dozen, \$ 9.50	10.50	12.00	19.00	33.00	48.00	74.00	150.00
" " " " Finished.....	10.00	11.00	13.00	20.00	37.00	56.00	86.00	170.00
Hose Bibbs, Rough.....	10.50	11.50	13.00	21.00	38.00	52.00	80.00	160.00
" " " " Finished.....	11.00	12.00	14.00	22.00	40.00	60.00	92.00	180.00

HOSE BIBB.

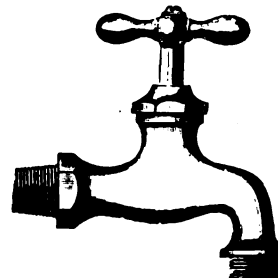


Fig. 270.

ROUGH AND PLAIN STOPS.—BRASS.

T HANDLE, with Waste,  
For Iron Pipe, Rough.



Fig. 271.

LEVER HANDLE,  
For Lead Pipe, Rough.

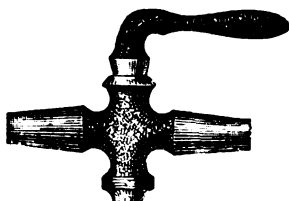


Fig. 272.

LEVER HANDLE,  
For Lead Pipe, Plain.

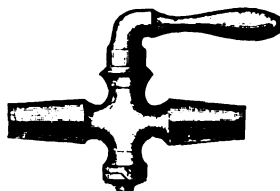


Fig. 273.

LEVER HANDLE,  
For Iron Pipe, Plain.

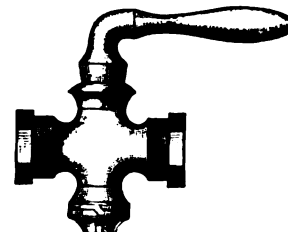


Fig. 274.

Sizes, inches.	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Rough Stops, T or Lever Handle, for Lead Pipe.....	per dozen, \$ 7.00	9.00	12.00	15.00	19.00	28.00	46.00	64.00	110.00	250.00	350.00
" " " " " " with Waste.....	8.00	10.00	13.00	16.00	20.50	30.00	48.00	68.00	120.00	270.00	375.00
" " " " " " Iron " " with Waste.....	8.00	10.00	13.00	17.00	21.00	31.00	50.00	70.00	120.00	270.00	400.00
" " " " " " " " with Waste.....	9.00	11.00	14.00	18.00	22.50	33.00	53.00	74.00	130.00	290.00	425.00
Plain Stops, Lever Handle, for Lead Pipe.....	10.50	12.50	15.50	18.50	25.00	37.00	62.00	86.00	175.00		
" " " " " " Iron Pipe.....	11.50	13.50	16.50	20.50	27.00	40.00					

RACKING, LOCK AND COMPRESSION  
LOCK COCKS.—BRASS.

RACKING, TO DRIVE.

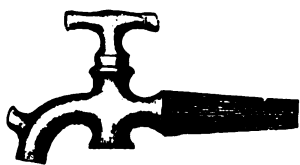


Fig. 275.

RACKING TO SCREW.

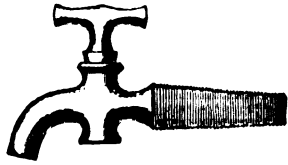


Fig. 276.

LOCK, TO SCREW.

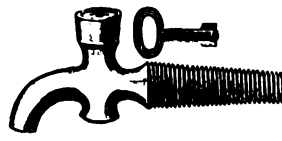


Fig. 277.

COMPRESSION LOCK,  
TO DRIVE.

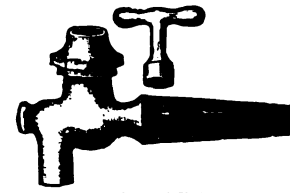


Fig. 278.

Sizes, inches.	1/4	5-16	3/8	7-16	1/2	9-16	5/8	3/4	7/8	1	1 1/4	1 1/2
Racking Cocks, to Drive.....	per dozen, \$5.00	6.00	7.50	9.00	10.00	12.50	14.50	17.00	23.00	30.00	54.00	72.00
" " " " " " Screw.....	5.50	6.50	8.00	10.00	11.00	14.00	16.00	19.00	25.00	32.50	58.00	77.00
Lock Cocks, to Drive.....	6.50	7.50	9.00	10.00	12.00		16.50	20.00		35.00		
" " " " " " Screw.....	7.00	8.00	9.50	11.00	13.00		18.00	22.00		37.50		
Compression Lock Cocks, to Drive.....			12.00		14.00		18.00	24.00				
" " " " " " Screw.....			12.50		15.00		19.50	26.00				

## COUNTER, BASIN AND BATH FITTINGS.

COUNTER COCK.



Fig. 279.

Finished.....	per dozen, \$30.00
Nickel Plated.....	" 34.00
Silver.....	" 44.00

BRACKET BASIN COCK.

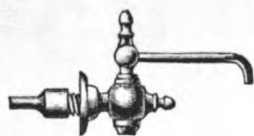


Fig. 280.

Finished.....	per dozen, \$18.00
Nickel Plated.....	" 22.00
Silver.....	" 26.00

BASIN COCK.



Fig. 281.

Finished.....	per dozen, \$24.00
Nickel Plated.....	" 28.00
Silver.....	" 36.00

COMPRESSION BASIN COCK.



Fig. 282.

Finished.....	per dozen, \$26.00
Nickel Plated.....	" 30.00
Silver.....	" 40.00

DOUBLE COMPRESSION BATH COCK.

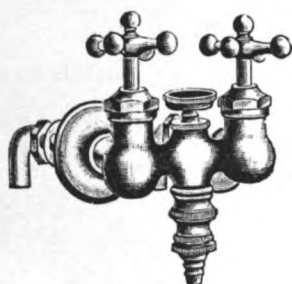


Fig. 283.

Finished.....	each, \$7.50
Nickel Plated.....	" 8.00
Silver.....	" 9.50

CHAIN STAY.



Fig. 284.

Finished.....	per dozen, \$5.50
Nickel Plated.....	" 6.50
Silver.....	" 7.50

WALNUT WASH STAND.



Fig. 287.

## Price for Wood Work Only.

With Plain Panels, One Door and Two Drawers.

For 27x20 Marble Slab.	For 30x20 Marble Slab.	For 33x20 Marble Slab.
Plain Panels..\$17.50	19.00	20.00
Veneered " .. 20.00	22.00	24.00

For Nickel Plated Handles add \$3.00 per set.

## WALNUT WASH STANDS, COMPLETE.

Black walnut case, marble slab, two cocks, chain stay, three basin clamps, basin plug and wash basin.

Prices on Application.

SINK OR BATH PLUG.



Fig. 285.

## Prices, Sink or Bath Plugs.

Sizes, inches.....	Fig. 285.				
Finished.....	per dozen, \$2.00	3/4	1	1 1/4	1 1/2
Nickel Plated.....	" 2.50	2.50	3.00	3.50	4.00
Finished.....	per dozen, \$7.00	2	2 1/4	2 1/2	3
Nickel Plated.....	" 8.00	10.00	12.00	15.00	18.00
		8.00	12.00	17.00	21.00

## Prices, Bath Valves.

Fig. 286.

Sizes, inches.....	1	1 1/4	1 1/2	2
Finished.....	per dozen, \$6.00	7.00	9.00	12.00

## Prices, Plain Strainers.

For Sink or Bath Plugs.

(No Cut.)

Sizes, inches.....		3/4	1	1 1/4	1 1/2	2	2 1/2
Per dozen.....	\$0.60	.85	1.20	1.45	1.80	2.40	
Sizes, inches.....		3	3 1/2	4	5	6	
Per dozen.....	\$3.00	3.60	4.80	9.00	12.00		

## COPPER BATH TUB.

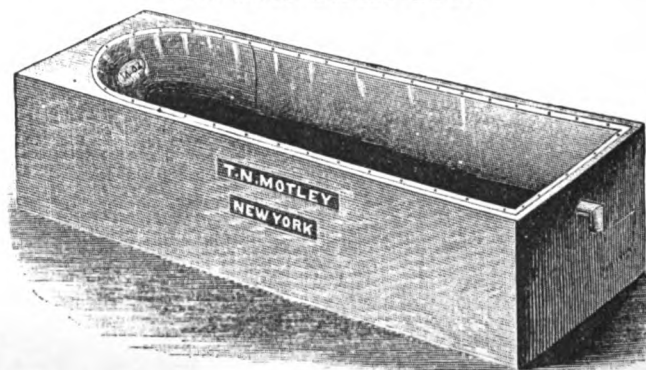


Fig. 288.

Fig. 288.

Size of Regular Tubs.....	Outside width, 2 feet.		Depth, 1 foot 7½ inches.			
Weight of Copper, per sq. ft....	10	12	14	16	18	20 oz.
Size, 5 feet.....	each, \$13.75	15.75	17.75	19.75	21.75	23.75
“ 5½ feet.....	“	13.75	15.75	17.75	19.75	21.75
“ 6 feet.....	“	13.75	15.75	17.75	19.75	21.75

## ZINC BATH TUBS.

Zinc Tub, 10 oz.....	each, \$8.00
----------------------	--------------

# WATER CLOSETS, URINALS, ETC.

**URINAL DRIP PAN**  
For Passenger Car.

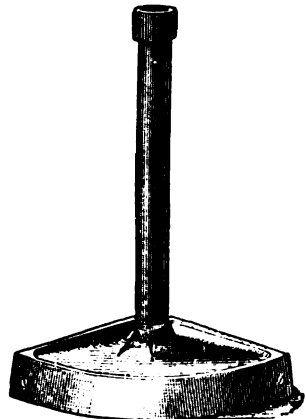


Fig. 289.

## DRIP PANS AND PIPES.

Fig. 289.

These Pans and Pipes are made of the best quality earthenware.

Drip Pans only.....	per dozen, \$52.50
Long Pipes, bent or straight....	" 13.50
Short " " " " " " " "	" 10.00

**RAILROAD CAR URINAL.**

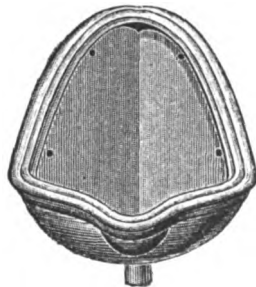


Fig. 290.

Fig. 290.....	each, \$5.90
Fig. 290, without lip " "	4.80

**RAILROAD CAR HOPPER.**

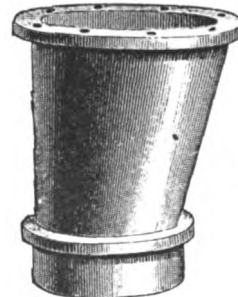


Fig. 291.

Fig. 291.....	each, \$8.40
Fig. 291, tap'd pattern " "	7.30

**LIP URINAL**  
With Flat Back.

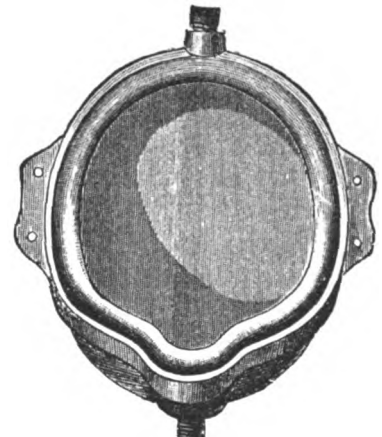


Fig. 292.

## URINALS,

Made of the best quality of earthenware.

Flat, Fig. 292.

Corner.

Sizes, inches.....	15x18	12x15	11½x14
With Lip, Fig. 292. each	\$10.00	8.25	
Plain " " " "	6.90	5.25	4.85

Sizes, inches.....	12x12	11x11	10¼x10¼
With Lip..... each,	\$10.00	8.25	
Plain " " " "	6.90	5.25	4.85

**EUREKA CISTERN WATER CLOSET.**

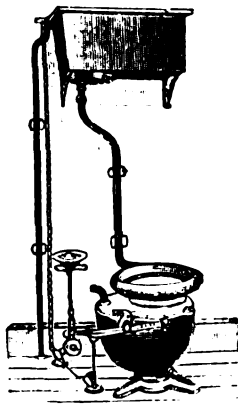


Fig. 293.

**EUREKA CISTERN CLOSET.**

Fig. 293.

Complete with cistern and bowl.

Each.....\$13.45

**EUREKA CLOSET WITHOUT CISTERN.**

Complete with valve, ball, lever and cranks.

Tarred.	Galvanized.	Enameled.
\$5.00	6.75	7.25

**CENTURY VALVE CLOSET.**

Fig. 294.

Tarred.	Galvanized.	Enameled.
\$5.00	6.75	7.25

**CENTURY CISTERN CLOSET.**

Complete with cistern and bowl.

Each.....\$12.45

## CISTERNS ONLY.

Made with improved service box and 7/8 or 1¼ inch discharge.

Discharge.	Painted.	Galv'd.	Enameled
7/8 inch.	\$7.00	10.00	11.00
1¼ " "	8.00	11.00	12.00

**CENTURY VALVE WATER CLOSET.**

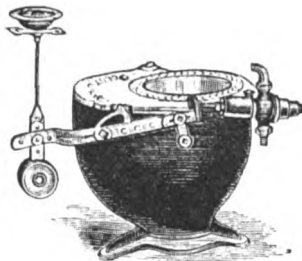


Fig. 294.

**ROUSE VALVE WATER CLOSET.**

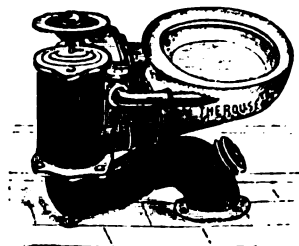


Fig. 295.

**PRESIDENT CISTERN WATER CLOSET.**

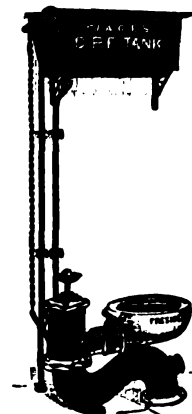


Fig. 296.

**ROUSE WATER CLOSET.**

With trap and improved flushing rim float valve.

Fig. 295.

With painted valve section and porcelain bowl..... each, \$30.00

Add if with extras as below.

Enameled Reservoir.....	each, \$4.00
" " Trap.....	" 2.50
Vented Bowl.....	" .50

Furnished with Offset or Straight Outlet, if preferred, at same price.

**THE PRESIDENT CISTERN CLOSET.**

With trap and improved flushing rim.

Fig. 296.

Complete with cistern.

With Painted Cistern..	each, \$35.00
" Galvanized " " "	38.00
" Enameled " " "	40.00
" Copper Lined Wood Cistern.....	each, 37.00

Furnished with offset or straight outlet, if preferred, at the same price.

**The President Closet Only,**  
With Trap.

Each .....\$25.00



Fig. 297.

## Price for Wood Work only.

Oil Finished, case only, for pan or plunger water closet.....	\$14.00
Shellac " " " " " "	15.50
Veneered " " " " " "	22.00
Oil Finished, front and top only, for pan or plunger closet.....	12.50
Shellac " " " " " "	14.50
Veneered, " " " " " "	19.00

Water Closet cases made to order for all styles of closets, and for placing in any position.





## WROUGHT IRON STEAM, GAS AND WATER PIPE.

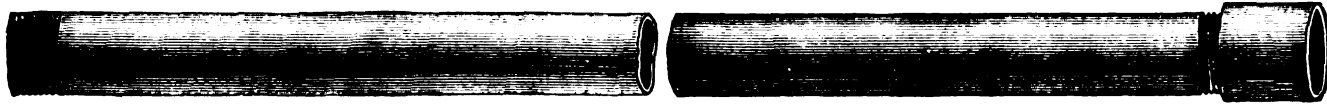


Fig. 317.

BUTT WELDED.							LAP WELDED.																		
Inside diameter, inches.....	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$	5	6	7	8	9	10	11	12	13	14	15
Nominal weight per foot, plain, lbs.....	.24	.42	.56	.84	1.12	1.67	2.24	2.68	3.61	5.74	7.54	9.00	10.66	12.34	14.50	18.76	23.27	28.18	33.70	40.06	45.02	49.00	54.00	58.00	
Outside diameter, plain, inches.....	.40	.54	.67	.84	1.05	1.31	1.66	1.90	2.37	2.87	3.50	4.00	4.50	5.00	5.56	6.62	7.62	8.62	9.68	10.75	11.75	12.75	14.00	15.00	16.00
Plain Pipe..... per foot, \$0.04	.04	.04	.04	.05	.07	.09	.12	.12	.12	.14	.15	.16	.17	.18	.19	.20	2.00	2.75	3.70	4.75	5.75	6.50	7.75	9.00	10.00
Galvanized Pipe.....	.05	.05	.05	.07	.09	.12	.17	.22	.28	.44	.58	.70	.85	1.00	1.25	1.50	2.00	2.00	2.75	3.70	4.75	5.75	6.50	7.75	9.00
Extra strong Pipe.....	.08	.08	.08	.10	.14	.19	.25	.44	.56	.88	1.16	1.40	1.70	2.00	2.40	3.30	4.00	5.50							
Double extra strong Pipe.....	.16	.16	.16	.20	.28	.38	.50	.88	1.12	1.76	2.32	2.80	3.40	4.00	4.80	6.60	8.00	11.00							
Plain Pipe, Tared.....	.42	.05	.06	.82	.11	.15	.15	.27	.34	.52	.67	.85	1.05	1.30	1.50	2.00									

For selected pipe, or pipe cut to specified lengths, the discount will be five (5) per cent. less in the gross (i. e., 5 per cent. higher in gross list discount) than on regular pipe.

On pipe lighter than standards, or without threads or sockets, no extra allowance will be made.

## LAP WELDED BOILER TUBES.

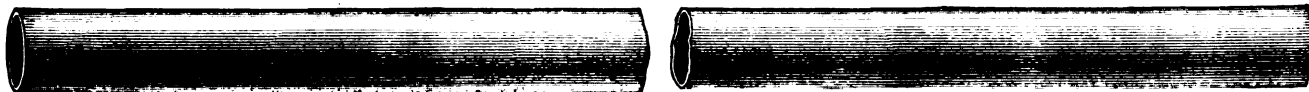


Fig. 318.

Outside Diameter, inches.....	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$	5	6	7	8	9	10	11	12	13	14	15	16
Thickness Wire Gauge.....	15	15	14	13	13	12	12	12	11	11	11	10	10	9	8	8	7	6	5	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4	3 $\frac{1}{2}$	3	2 $\frac{1}{2}$
Price per foot.....	\$0.23	.23	.23	.22	.22	.25	.28	.31	.34	.38	.43	.45	.52	.60	.72	1.00	1.45	1.85	2.25	2.75	3.25	3.55	4.20	4.75	5.75

The above prices are for tubes up to 20 feet long. For tubes in excess of that length ten (10) per cent. will be added to net of invoice. Extra thickness of tubes will be charged as per list of extra gauges.

## Net Prices, EXTRA GAUGES OF BOILER TUBES.

For EXTRA wire gauge "Boiler Tubes" away from standard, not exceeding four wire gauges, add one cent for each inch in diameter to the net price per foot for each additional number.

To calculate the price, take the discount from the list prices of regular tubes, and add thereto net charge for extra wire gauge, thus:

For 1 Number.	For 2 Numbers.	For 3 Numbers.	For 4 Numbers.
2 in., 2 cts.	2 in., 4 cts.	2 in., 6 cts.	2 in., 8 cts.
2 $\frac{1}{4}$ " 2 $\frac{1}{4}$ "	2 $\frac{1}{4}$ " 4 $\frac{1}{2}$ "	2 $\frac{1}{4}$ " 6 $\frac{3}{4}$ "	2 $\frac{1}{4}$ " 9 "
2 $\frac{1}{2}$ " 2 $\frac{1}{2}$ "	2 $\frac{1}{2}$ " 5 "	2 $\frac{1}{2}$ " 7 $\frac{1}{2}$ "	2 $\frac{1}{2}$ " 10 "

BEST STEEL LAP WELDED BOILER TUBES  
Of Extra Gauge.

Made specially for locomotive, marine and stationary boilers.

Outside diameter, inches.....	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3
Thickness Wire Gauge.....	14	14	13	12	12	12	11	11	11
Weight per foot, lbs.....	.81	1.03	1.42	1.91	2.20	2.49	3.05	3.37	3.68
Inside diameter, inches.....	.83	1.08	1.31	1.53	1.78	2.03	2.26	2.51	2.76
Price per foot.....	\$0.35	.34	.33	.32	.32	.35	.38	.42	.45

Prices on Tubes of larger diameter furnished on application.

## SAFE ENDS

Made of a Superior Quality of Iron.

Net prices for Safe Ends to 6 inches long inclusive. Over 6 inches long the extra length will be charged for in same proportion.

Sizes, inches.....	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$	5	6
Each End.....	\$0.13	.13	.13	.13	.13	.14	.16	.18	.20	.22	.25	.27	.29	.32	.45

SAFE ENDS PUT ON NEW BOILER TUBES.  
Net Prices.

Sizes, inches.....	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$	5	6
Each Boiler Tube (both ends), \$0.60	.60	.60	.60	.60	.60	.68	.80	.94	1.00	1.17	1.40	1.61	1.78	2.08	2.70

Prices for Safe Ends govern up to No. 10 Birmingham W. G. Beyond that an extra charge will be made at rate of one cent per each inch in diameter for each extra gauge per safe end.

## WROUGHT IRON ARTESIAN, SALT, OIL AND GAS WELL TUBING.

With screw and socket joints, finished smooth inside.

Inside diameter, inches.....	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$	5	6	7	8	9	10	12
Weight per foot, lbs.....	1.67	2.24	2.68	3.61	5.74	7.54	9.00	10.66	12.34	14.50	18.76	23.27	28.18	33.70	40.06	49.00
Outside diameter, inches.....	1.31	1.66	1.90	2.37	2.87	3.50	4.00	4.50	5.00	5.56	6.62	7.62	8.62	9.68	10.75	12.75
Price per foot.....																

Prices on application.

## HYDRAULIC TUBES.

Pipe heavier than steam pipe, and away from the standards of extra strong or double extra strong pipe, will be classed as "Hydraulic," and sold by the pound. Up to and including  $\frac{1}{2}$  inch thick..... per lb., \$0.12 Larger than  $\frac{1}{2}$  inch thick..... per lb., \$0.18

## SEAMLESS BRASS AND COPPER TUBES.

Regular Sizes, in 12 foot lengths.

Outside diameter, inches.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	1 $\frac{7}{8}$	2	2 $\frac{1}{8}$	2 $\frac{1}{4}$	2 $\frac{3}{8}$	2 $\frac{1}{2}$	2 $\frac{7}{8}$	3	3 $\frac{1}{8}$	3 $\frac{1}{4}$	4	4 $\frac{1}{8}$	4 $\frac{1}{4}$	4 $\frac{3}{8}$	4 $\frac{1}{2}$	5	5 $\frac{1}{8}$	6
Stub's Wire Gauge.....	19	18	17	17	17	16	16	15	14	14	13	13	12	12	12	12	10	10	10	10	10	10	10	10	10	10	10	10	10
Weight per ft., Brass, lbs.....	.18	.27	.33	.46	.49	.53	.63	.67	.78	.97	1.22	1.36	1.65	1.79	1.83	2.19	2.28	2.35	2.53	2.68	2.84	3.74	4.99	4.14	4.54	4.94	5.35	6.14	6.33
Weight per ft., Copper, lbs.....	.19	.29	.35	.49	.53	.58	.67	.71	.80	1.02	1.29	1.44	1.74	1.88	2.19	2.31	2.40	2.47	2.66	2.82	2.99	3.94	4.15	4.36	4.78	5.20	5.63	6.46	6.66
Price per lb.....																													

Prices on application.

## Iron Pipe Sizes, in 12 foot lengths.

Outside diameter, inches.....	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	1 $\frac{7}{8}$	2	2 $\frac{1}{8}$	2 $\frac{1}{4}$	2 $\frac{3}{8}$	2 $\frac{1}{2}$	2 $\frac{7}{8}$	3	3 $\frac{1}{8}$	3 $\frac{1}{4}$	4	4 $\frac{1}{8}$	4 $\frac{1}{4}$	4 $\frac{3}{8}$	4 $\frac{1}{2}$	5	5 $\frac{1}{8}$	6
Same as iron size, inches.....	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	1 $\frac{7}{8}$	2	2 $\frac{1}{8}$	2 $\frac{1}{4}$	2 $\frac{3}{8}$	2 $\frac{1}{2}$	2 $\frac{7}{8}$	3	3 $\frac{1}{8}$	3 $\frac{1}{4}$	4	4 $\frac{1}{8}$	4 $\frac{1}{4}$	4 $\frac{3}{8}$	4 $\frac{1}{2}$	5	5 $\frac{1}{8}$	6
Weight per foot, Brass, per lb.....	.31	.42	.56	.81	1.19	1.66	2.42	3.07	3.90	5.14	8.08												
" " Copper ".....	.33	.44	.59	.85	1.25	1.74	2.54	3.07	4.09	5.41	8.50												
Price per lb.....																							

Prices on application.

## BRAZED BRASS, COPPER AND BRONZE TUBES.

Numbered by Brown & Sharpe's Gauge.

All Gauges  $\frac{1}{8}$  to 3 inches diameter.....Prices on application

## ZINC TUBES.

Plain.....per lb., \$0.22 Fancy Shapes.....per lb., \$0.27 Extra Pattern.....per lb., \$0.30

# FITTINGS FOR WROUGHT IRON PIPE.

PLAIN ELBOW. REDUCING ELL. ELL, BACK OUTLET. 45° ELBOW.

PLAIN TEE.

REDUCING TEE.



Fig. 319.

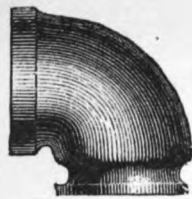


Fig. 320.

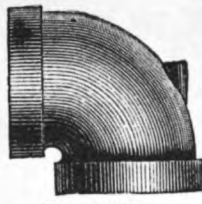


Fig. 321.



Fig. 322.

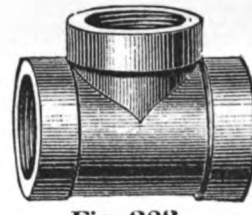


Fig. 323.



Fig. 324.

PLAIN CROSS.

REDUCING CROSS.

REDUCING CROSS.

REDUCING TEE.

CORNER FITTING.

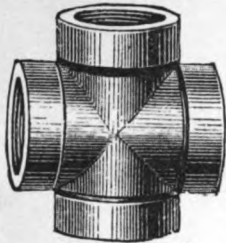


Fig. 325.

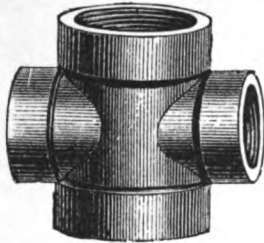


Fig. 326.

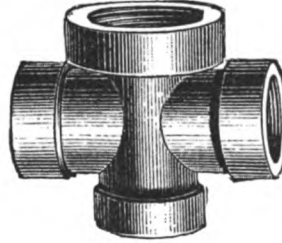


Fig. 327.

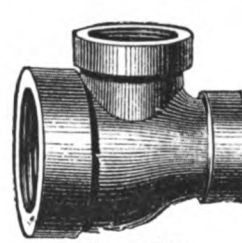


Fig. 328.

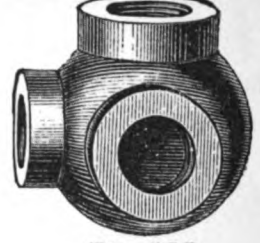


Fig. 329.

Y OR LATERAL BRANCH.

RETURN BEND,  
Close.

RETURN BEND,  
Open.

RETURN BEND,  
Back Outlet.

RETURN BEND,  
Side Outlet.

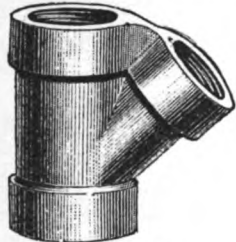


Fig. 330.

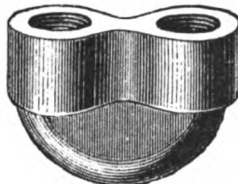


Fig. 331.

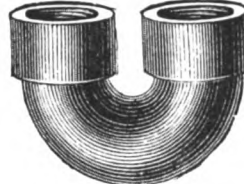


Fig. 332.

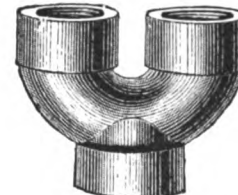


Fig. 333.

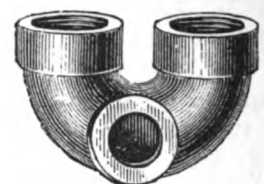


Fig. 334.

CAP,  
Cast Iron.

Wrought Iron.

COUPLINGS.

Cast Iron  
Reducing.

Malleable Iron  
Reducing.

Right and Left.

PLUG.

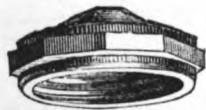


Fig. 335.

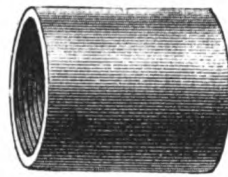


Fig. 336.



Fig. 337.



Fig. 338.



Fig. 339.

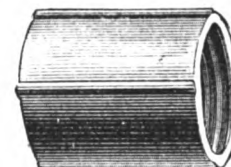


Fig. 340.

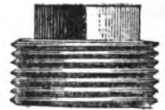


Fig. 341.

WROUGHT IRON BEND,  
One-Eighth Turn.

Shoulder.

WROUGHT IRON NIPPLES.

Long.

Close.

WROUGHT IRON BEND,  
One-Quarter Turn.



Fig. 342.

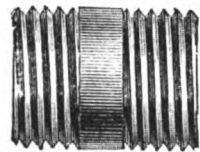


Fig. 343.

LOCKNUT,  
Malleable Iron.



Fig. 347.



Fig. 344.

LONG SCREW.



Fig. 348.

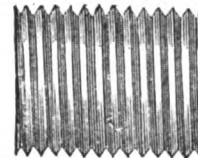


Fig. 345.

LOCKNUT,  
Cast Iron.



Fig. 349.

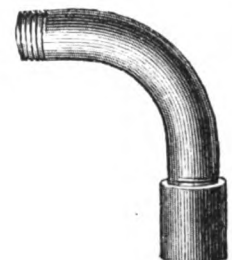


Fig. 346.

OVAL FLANGE.

BLANK FLANGE.

FLANGE UNIONS.

Common.

New Style.

CURVED FLANGE.

OFFSET.



Fig. 350.

UNION.

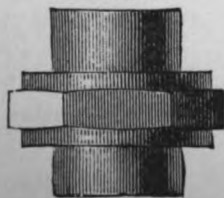


Fig. 354.

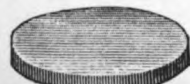


Fig. 351.

COMMON FLANGE.

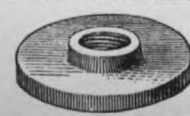


Fig. 355.

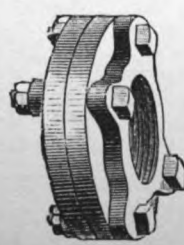


Fig. 356.

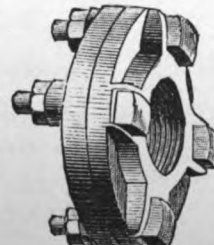


Fig. 357.



Fig. 352.

BOSSED FLANGE.

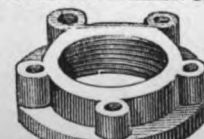


Fig. 358.

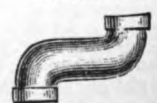


Fig. 353.

BUSHING.



Fig. 359.



## FITTINGS FOR WROUGHT IRON PIPE.

## Prices Black Fittings, Each.

Size of Pipe, inches	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	10	12
Elbows	\$0.04	.05	.06	.09	.13	.20	.25	.40	.75	1.10	1.35	1.80	2.50	2.85	3.90	7.00	10.00	20.00	30.00
“ R. and L. Hand and Reducing	.05	.06	.07	.11	.16	.23	.29	.46	.85	1.25	1.50	2.10	3.00	3.25	4.50	8.00	11.50	23.00	35.00
“ with Side Outlet	.08	.10	.12	.18	.26	.40	.50	.80	1.50	2.20	2.70	3.60	5.00	5.70	7.80	14.00	20.00	40.00	60.00
45° Elbows		.10	.10	.15	.20	.26	.35	.50	1.30	1.60	1.90	2.50	3.50	4.50	5.50	9.00	12.00	22.00	33.00
Tees	.06	.07	.09	.13	.20	.30	.38	.60	1.10	1.50	2.00	2.50	3.50	4.00	5.50	10.00	15.00	25.00	45.00
“ Reducing	.07	.08	.11	.15	.23	.35	.44	.70	1.25	1.75	2.30	2.90	4.00	4.60	6.35	11.50	17.00	30.00	50.00
Crosses	.08	.10	.12	.18	.28	.40	.50	.80	1.50	2.20	2.70	3.50	5.00	5.70	7.80	14.00	20.00	40.00	60.00
“ Reducing	.10	.12	.14	.21	.32	.46	.58	.92	1.70	2.50	3.00	4.00	6.00	6.60	9.00	16.00	23.00	46.00	70.00
Y Branches			.25	.30	.40	.60	.90	1.25	2.25	3.25	4.50	6.00		9.00	12.00	17.00	25.00		
Return Bends, Close			.10	.15	.22	.34	.45	.75	1.50	2.25									
“ Open			.15	.20	.30	.48	.68	1.15	1.75	2.75									
Unions, with Lip (Malleable)	.15	.18	.20	.28	.34	.46	.60	.80	1.50	2.10	3.00	4.00							
“ Flanged complete		.60	.65	.70	.85	1.15	1.50	1.75	2.25	2.75	3.15	4.50	5.00	6.50	8.00	10.00	15.00	22.00	
Couplings (Wrought Iron)	.05	.06	.07	.10	.13	.17	.21	.28	.40	.60	.80	1.00	1.50	1.65	2.40	3.25	4.25	7.50	10.00
“ Right and Left (Wrought Iron)	.07	.08	.11	.15	.20	.25	.30	.50	.85	1.20	1.60	2.00							
“ Reducing	.04	.06	.09	.12	.18	.25	.36	.50	.75	1.20	1.50	2.00	2.75	3.00	4.00	8.00	10.00	15.00	
Caps	.03	.03	.05	.08	.11	.15	.22	.30	.50	.80	1.10	1.30	1.60	2.00	2.35	4.00	4.35	7.25	10.00
Locknuts	.04	.04	.06	.07	.08	.10	.12	.25	.40	.50	.70	.95	1.25	1.35	1.90	2.50	3.50	4.50	6.00
Bushings	.05	.05	.06	.07	.09	.13	.17	.27	.42	.60	.80	1.00	1.50	1.85	2.50	3.75	5.50	7.50	10.00
Plugs	.03	.03	.04	.05	.06	.10	.13	.20	.35	.50	.75	.85	1.35	1.75	2.40	3.75	5.50	7.50	10.00
Offsets, to set off 4 inches			.45	.70	1.00	1.20	1.80	3.00	4.00	5.00	6.00			8.00	10.00				
“ 6 “			.67	1.05	1.50	1.80	2.70	4.50	6.00	7.50	9.00			12.00	15.00				
“ 8 “			.90	1.40	2.00	2.40	3.60	6.00	8.00	10.00	12.00			16.00	20.00				
Long Screws	.30	.35	.40	.55	.75	1.00	1.30	1.70	2.70	3.70	5.39	6.60							
Nipples, Shoulder or Close	.05	.06	.07	.09	.10	.14	.17	.25	.56	.75	1.00	1.25	1.75	2.00	2.75	4.00	5.75	8.50	12.00
“ R. and L.	.10	.10	.12	.15	.18	.24	.30	.40	1.00	1.25	1.50	1.75							
“ Long, 2 to 3 1/2 inches	.07	.09	.10	.11	.15	.20	.25	.35	.75	.95	1.25	1.60	2.25	2.60	3.60				
“ 2 to 3 1/2 “ R. and L.	.12	.14	.16	.20	.24	.35	.46	.60	1.30	1.60	2.00	2.40							

Elbows with back outlet, Return Bends with back or side outlets and Wrought Bends to order.

## Prices Galvanized Fittings, Each.

Size of Pipe, inches	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	10	12
Elbows	\$0.06	.09	.12	.18	.30	.45	.55	.85	1.60	2.35	3.10	4.10	6.00	7.00	11.00	15.00	20.00	40.00	60.00
Tees	.08	.13	.17	.25	.40	.60	.85	1.20	2.25	2.85	3.80	5.25	7.00	8.00	12.50	18.00	24.00	55.00	80.00
Crosses	.15	.18	.23	.35	.55	.80	1.00	1.60	3.00	4.25	5.50	7.00	9.00	10.50	16.00	23.00	35.00	80.00	100.00
45° Elbows		.15	.20	.35	.45	.65	.95	1.90	3.00	4.00	5.25	9.25	9.25	13.50					
Unions, with Lip	.20	.24	.27	.37	.50	.70	.90	1.20	2.25	2.90	4.50	5.60							
“ Flanged complete			1.60	1.60	2.00	2.40	2.80	3.20	3.60	4.00	4.80	6.00	7.00	7.00	8.00				
Couplings	.06	.08	.10	.13	.18	.25	.32	.40	.55	.80	1.05	1.40	2.25	2.25	3.25				
Nipples, Shoulder or Close	.07	.08	.09	.11	.13	.17	.23	.32	.65	1.00	1.25	1.45	1.90	2.40	3.50				
“ Long, 2 to 3 1/2 inches	.09	.11	.13	.16	.19	.24	.31	.40	.85	1.20	1.50	1.90	2.40	3.00	4.40				
Caps	.05	.05	.07	.10	.14	.20	.30	.40	.65	1.00	1.30	1.60							

## CAST IRON FLANGES.

## Blank and Curved Flanges to order.

Diameter of Flanges, inches.	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8	8 1/2	9	9 1/2	10	10 1/2	11	11 1/2	12	13	14	15	16	17	18
3/8	\$0.14	.17	.20	.26	.31	.40	.50																		
1/2		.17	.20	.26	.31	.40	.50	.55	.65	.75	.85	.95													
3/4		.18	.21	.28	.33	.40	.50	.60	.68	.80	.90	1.00													
1		.20	.22	.28	.33	.42	.52	.62	.72	.80	.90	1.00	1.10												
1 1/4		.23	.25	.30	.35	.42	.52	.62	.72	.80	.90	1.00	1.10	1.20	1.40										
1 1/2			.31	.36	.42	.52	.62	.72	.80	.90	1.00	1.10	1.20	1.40											
2				.38	.45	.55	.65	.75	.80	.90	1.00	1.15	1.25	1.45	1.65	1.90									
2 1/2					.45	.55	.65	.75	.80	.90	1.00	1.15	1.30	1.45	1.65	1.90	2.00	2.25							
3						.55	.65	.75	.84	.96	1.08	1.22	1.37	1.52	1.69	1.90	2.12	2.35	2.60	3.25					
3 1/2						.70	.75	.87	1.00	1.13	1.26	1.55	1.75	1.75	1.95	2.25	2.50	2.85	3.50						
4							.87	1.04	1.22	1.40	1.58	1.76	1.96	2.16	2.36	2.56	2.85	3.50							
4 1/2								1.55	1.70	1.90	2.10	2.32	2.54	2.76	3.00	3.75									
5								1.65	1.80	2.00	2.20	2.40	2.60	2.80	3.05	3.75									
6									2.20	2.40	2.60	2.80	3.00	3.20	3.45	3.75									
7										2.80	3.00	3.75	4.10	4.50	5.00	5.50	6.25								
8											4.00	4.50	5.00	5.60	6.25	6.90	7.50								
10												6.00	6.60	7.25	8.00	9.25									
12													9.00	9.75	10.75										

## BRASS FITTINGS, IRON PIPE SIZES.

## Prices Rough Brass Fittings, Each.

Sizes, inches	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Elbows	\$0.10	.12	.16	.25	.35	.50	.85	1.15	2.00	3.00	4.25
Tees	.15	.18	.24	.38	.50	.75	1.25	1.75	3.00	4.50	6.50
Crosses	.20	.25	.32	.50	.70	1.00	1.70	2.30	4.00	6.00	8.50
Return Bends, Close		.40	.60	.90	1.50	2.00	3.00	6.00	9.00		
“ Open		.50	.70	1.05	1.75	2.25	3.50	7.50	11.00		
Couplings	.08	.10	.15	.20	.30	.35	.60	.75	1.25	1.75	3.00
Caps or Plugs	.06	.08	.10	.15	.20	.30	.50	.70	.90	1.50	2.25
Nipples, Short	.20	.20	.25	.30	.35	.45	.60	.80	1.10	1.65	2.75
Locknuts	.08	.10	.12	.15	.20	.30	.45	.70	1.00	2.00	
Reducers	.12	.18	.25	.35	.45	.70	.90	1.50	2.10	3.25	

Brass Gas Fixture Fittings.  
Prices on application.

## Prices Brass Bushings, Each.

Sizes, in.	Each.	Sizes, in.	Each.	Sizes, in.	Each.	Sizes, in.	Each.
1/8x1/4	\$0.07	3/8x1/2	\$0.11	3/4x1 1/4	\$0.50	1 1/4x2 1/2	\$1.50
1/8x3/8	.09	3/8x3/4	.21	3/4x1 1/2	.67	1 1/2x2	.84
1/8x1/2	.13	3/8x1	.38	3/4x2	.84	1 1/2x2 1/2	1.50
1/8x3/4	.21	1/2x3/4	.21	1x1 1/4	.50	1 1/2x3	2.50
1/4x3/8	.09	1/2x1	.38	1x1 1/2	.67	2x2 1/2	1.50
1/4x1/2	.13	1/2x1 1/4	.50	1x2	.84	2x3	2.50
1/4x3/4	.21	1/2x1 1/2	.67	1 1/4x1 1/2	.67	2 1/2x3	2.50
1/4x1	.38	3/4x1	.38	1 1/4x2	.84		

## Prices, Finished Brass Unions, Each.

Sizes, inches	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Price each	\$0.35	.40	.55	.75	1.00	1.40	1.90	2.75	4.00	6.00	8.50

THORNTON N. MOTLEY, NEW YORK.

MALLEABLE IRON FITTINGS.

ELBOWS,  
Smooth for  
Gas. Beaded for  
Steam.



Fig. 360.



Fig. 361.

STREET ELBOW,  
Male and Female  
Screw.

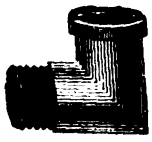


Fig. 362.

ELBOW,  
With Side Outlet.

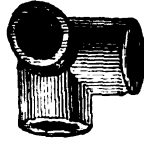


Fig. 363.

Female.

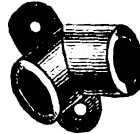


Fig. 364.

DROP ELBOWS,  
Male and Female.

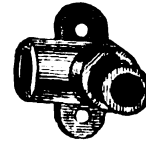


Fig. 365.

With Long  
Outlet Piece.

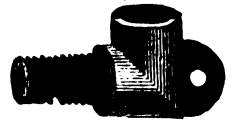


Fig. 366.

DROP ELBOWS.  
Flange Left  
Side. Flange Right  
Side.

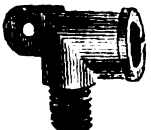


Fig. 367.

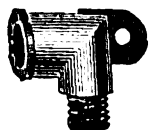


Fig. 368.

TEES.  
Smooth for  
Gas. Beaded for  
Steam.

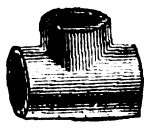


Fig. 369.



Fig. 370.

DROP TEES.  
Female. Male and Female.

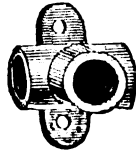


Fig. 371.

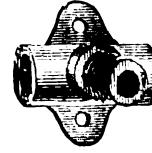


Fig. 372.

CROSSES.  
Smooth. Beaded.



Fig. 373.



Fig. 374.

RETURN BEND.  
Open Pattern. CAP.

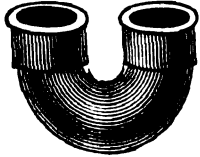


Fig. 375.



Fig. 376.

WASTE  
NUT.



Fig. 377.

EXTENSION  
PIECE.



Fig. 378.

LOCKNUT.

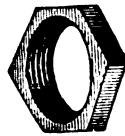


Fig. 379.

REDUCING  
COUPLING.

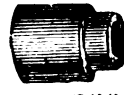


Fig. 380.

PIPE  
STRAP.



Fig. 381.

PLUG. RETURN BEND.  
Closed Pattern.



Fig. 382.



Fig. 383.

Revised Classification and Price List Malleable Iron Fittings.

Elbows..... $\frac{1}{8}$ , $\frac{1}{4}$ x $\frac{1}{4}$ , $\frac{3}{8}$ x $\frac{1}{2}$ in.	Tees..... $\frac{1}{8}$ , $\frac{1}{4}$ x $\frac{1}{4}$ , $\frac{1}{4}$ x $\frac{1}{2}$ , $\frac{3}{8}$ x $\frac{1}{2}$ in.	Reducing Couplings..... $\frac{1}{4}$ x $\frac{1}{8}$ , $\frac{3}{8}$ x $\frac{1}{2}$ in.	Rod Couplings. Right Hand Couplings, $\frac{1}{2}$ in.
Class A, per pound.....\$0.25.	Class B, per pound.....\$0.15.	Class C, per pound.....\$0.13.	Class D, per pound.....\$0.11.
Elbows and Tees, $\frac{1}{4}$ to $\frac{1}{2}$ in. inclusive. Crosses, to 1 in. inclusive. Plugs, Caps and Locknuts, to 1 in. inclusive. R. H. Couplings, $\frac{1}{4}$ to $\frac{3}{4}$ in. inclusive.	Return Bends, to 1 in. inclusive. Elbows, Side Outlets, all sizes. Drop Elbows and Tees, all sizes. R. & L. Couplings, $\frac{1}{4}$ to $\frac{3}{4}$ in. inclusive.	Extension Pieces, all sizes. Chandelier Hooks. Service or Street Ells, to $\frac{3}{4}$ in. inclusive. Four-way Tees, all sizes.	Reducing Couplings, $\frac{3}{8}$ x $\frac{1}{4}$ to 1 in. inclusive. R. & L. Fittings, to 1 in. inclusive. Waste Nuts and Wall Plates.
Elbows and Tees, $\frac{3}{4}$ to 1 in. inclusive. Plugs, Caps and Locknuts, $1\frac{1}{4}$ in. and larger. R. & L. Couplings, 1 in. and larger.	R. H. Couplings, 1 in. and $1\frac{1}{4}$ in. Crosses, $1\frac{1}{4}$ in. and larger. Such Fittings in this class as have smaller outlets than $\frac{3}{4}$ in., to be classed B.	Reducing Couplings, $1\frac{1}{4}$ in. and larger. Return Bends, $1\frac{1}{4}$ in. and larger.	Service or Street Ells, 1 in. and larger. R. & L. Fittings, $1\frac{1}{4}$ in. and larger.
Elbows and Tees, $1\frac{1}{4}$ in. and larger. Such Fittings in this class that have outlets smaller than 1 in., to be classed C.	Elbows and Tees, $1\frac{1}{4}$ in. and larger. Such Fittings in this class that have outlets smaller than 1 in., to be classed C.	Elbows and Tees, $1\frac{1}{4}$ in. and larger. Such Fittings in this class that have outlets smaller than 1 in., to be classed C.	Elbows and Tees, $1\frac{1}{4}$ in. and larger. Such Fittings in this class that have outlets smaller than 1 in., to be classed C.

Galvanized Malleable Iron Fittings as per Standard List.

Class A, per pound.....\$0.35.	Class B, per pound.....\$0.22.	Class C, per pound.....\$0.20.	Class D, per pound.....\$0.18.
An extra charge of 10 cents per pound will be added to price of Galvanized Fittings not enumerated in Standard List.			

SOLDERING UNION.  
Brass.

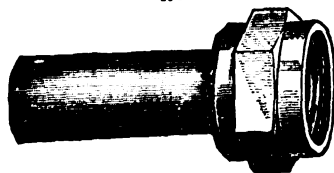


Fig. 384.

BRASS SOLDERING NIPPLES.  
Screwed Outside. Screwed Inside.

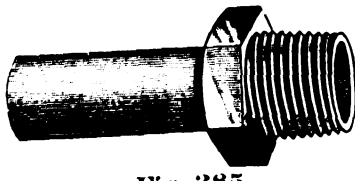


Fig. 385.

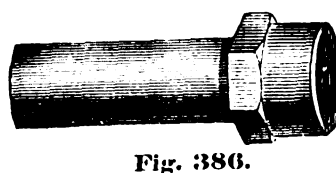


Fig. 386.

PLAIN COUPLING.  
Brass.



Fig. 387.

Prices, Soldering Unions and Nipples.

Sizes, inches	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Fig. 384, per dozen	\$2.00	2.25	2.75	3.25	4.00	6.00	8.50	12.00	18.00		
Figs. 385 & 386	1.50	1.75	2.25	2.50	3.00	5.00	7.50	10.00	14.00	20.00	28.00

Prices, Plain Couplings.

Sizes, inches	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Plain Face	\$2.75	3.00	3.50	4.00	5.00	6.50	10.00	15.00	20.00	30.00	40.00
Ground	3.75	4.00	4.50	5.00	6.50	8.00	12.00	18.00	24.00	36.00	48.00

EXPANSION JOINT,  
Steam Metal Screwed.

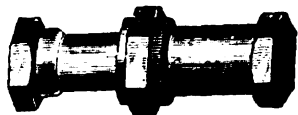


Fig. 388.

EXPANSION JOINT,  
Iron Body Screwed.

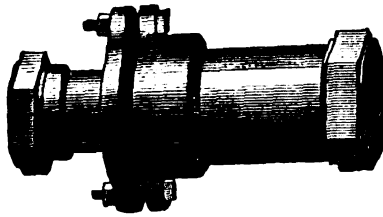


Fig. 389.

EXPANSION JOINT,  
Iron Body Flanged.

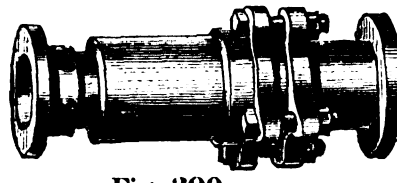


Fig. 390.

SWING JOINT,  
Steam Metal.

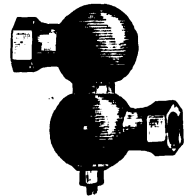


Fig. 391.

Sizes, inches	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	3	4	5	6	8	10
Length of Traverse, Fig. 388	1.10	1.25	1.50	2.00	2.75	4.00	5.50	8.00	16.00	24.00	35.00	55.00	85.00	135.00
Prices, Fig. 388, Steam Metal, Screwed	each													
Length of Traverse, Figs. 389 and 390	1.10	1.25	1.50	2.00	2.75	4.00	5.50	8.00	16.00	24.00	35.00	55.00	85.00	135.00
Prices, Fig. 389, I. B. M., Screwed	each													
Prices, Fig. 390, I. B. M., Flanged	each													
Sizes, inches	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	3	4	5	6	8	10
Rough	each, \$1.00	1.25	1.75	2.40	3.50	4.50	6.25	9.00	11.25	15.00	20.00	27.50	40.00	60.00
Finished	each, \$1.25	1.50	2.00	2.75	4.00	5.00	7.00	10.00	12.50	17.50	24.00	33.00	50.00	75.00

SWING JOINTS, Fig. 391.

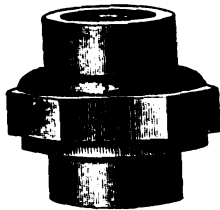
**UNION COMPLETE.**

Fig. 392.

The "American" Union is an extra heavy malleable iron union, which requires no packing or preparation of any sort, to make a perfect and permanent joint that will withstand the action of steam, water, gas, acids, oils, brine, ammonia, etc. The composition metal with which the joint is made being entirely non-corrosive, will last indefinitely, as it cannot burn, blow or rot out: while if desired, the union can be taken apart in a moment, and as quickly put together, a glance at the sectional cut will show the bed of anti-corrosive metal—A—and the manner in which the joint is made.

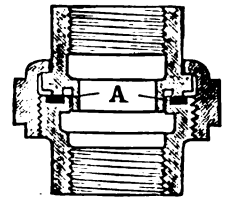
**SECTIONAL CUT.**

Fig. 393.

Sizes, inches.....	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Plain, each.....	\$0.20	.24	.28	.35	.40	.56	.80	.95	2.00	2.75
Galvanized, each.....	.24	.28	.35	.46	.55	.78	1.12	1.35	2.90	3.75

**Prices.**

Sizes, inches.....	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Tinned, each.....	\$0.30	.33	.45	.55	.65	.90	1.40	1.55		

The Tinned "American" Union is an excellent substitute for brass.

**MALLEABLE IRON RAILING FITTINGS.**

For fences, enclosing engines and machinery, exhibition spaces, etc.

**ELBOW. ELL, Side Outlet.**

Fig. 394.



Fig. 395.

**ACORN ORNAMENT.**

Fig. 399.

**FLOOR FLANGE.**

Fig. 400.

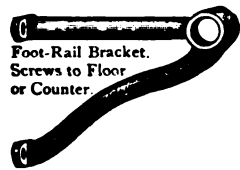
**FOOT RAIL BRACKET.**

Fig. 403.

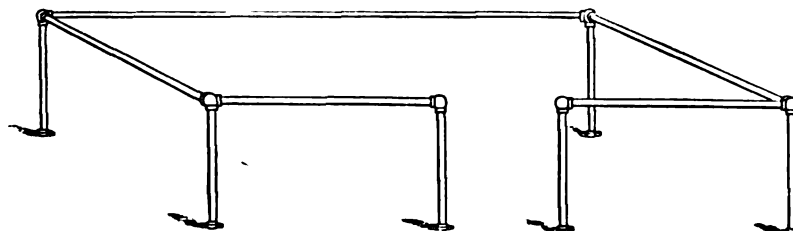
**ILLUSTRATION OF RAILING ONE PIPE HIGH.**

Fig. 396.

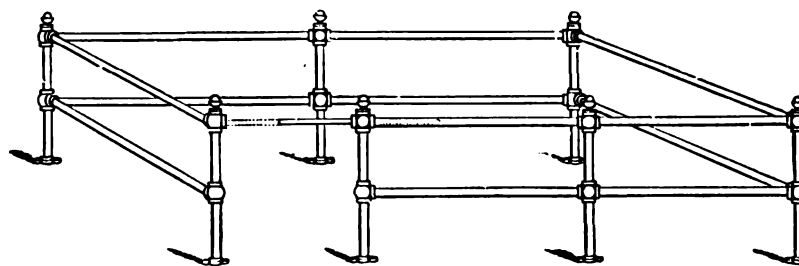
**ILLUSTRATION OF RAILING TWO PIPES HIGH.**

Fig. 404.

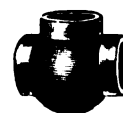
**TEE.****TEE, Side Outlet.**

Fig. 397.



Fig. 398.

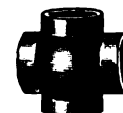
**CROSS.****CROSS, Side Outlet.**

Fig. 401.



Fig. 402.

**HINGE FOR PIPE GATES.**

Fig. 405.

In ordering these Railing Fittings give figure number, and state whether right hand or left hand threads are wanted. When fittings are required having both right and left hand outlets, please fully describe which outlets are wanted right hand and which left hand.

**Prices.**

Size of Pipe, inches.....	1/2	3/4	1	1 1/4	1 1/2	2	Size of Pipe, inches.....	1/2	3/4	1	1 1/4	1 1/2	2
Elbows, Fig. 394.....	each, \$0.10	.15	.20	.35	.45	.72	Crosses, side outlet, Fig. 402.....	each, \$0.18	.27	.40	.50	.65	1.35
Elbows, side outlet, Fig. 395.....	"	.12	.18	.25	.40	.80	Floor Flanges, Fig. 400.....	"	.12	.15	.20	.28	.30
Tees, Fig. 397.....	"	.12	.18	.25	.40	.75	Acorn Ornaments, Fig. 399.....	"	.10	.15	.20	.25	.35
Tees, side outlet, Fig. 398.....	"	.15	.22	.35	.45	.90	Foot Rail Brackets, Fig. 403.....	"	.40	.50	.70	.80	.90
Crosses, Fig. 401.....	"	.15	.22	.35	.45	.58	Hinges for Pipe Gates, Fig. 405.....	"	.35	.40	.45	.55	.80

1/2 and 3/4 Foot Rail Brackets will be found very convenient for rails to hang dry goods, carpets, etc.

**GRIFFIN FOOT RAIL FITTINGS.****FOOT RAIL BRACKET.**

Fig. 406.

**END PIECE.**

Fig. 407.

**ACORN END PIECE.**

Fig. 408.

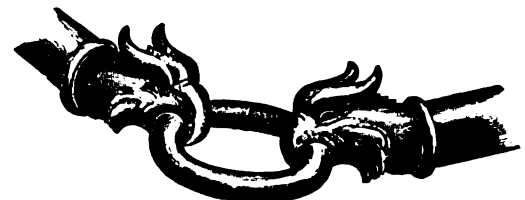
**CORNER FITTING.**

Fig. 409.

**ROSETTE FOR RAILING.**

Fig. 410.

These Foot Rail Fittings are artistic in design and their lightness and beauty of form add to, and improve the most handsome surroundings, while in point of cleanliness they far surpass the gaping "Y" support.

Where rails with the old form of bracket are in place and in use, the latter can be removed and the "Griffin" pattern substituted without discarding the rail, and considerable expense be thus saved, while the handsome effect of a new rail will be given.

**Prices.**

	Plain Iron.	Bronzed Iron.	Galvanized Iron.	Artistic Brass
Brackets.....Fig. 406, each,	\$0.50	.85	.85	3.50
End Pieces....." 407, "	.15	.25	.25	1.40
Acorn End Pieces....." 408, "	.10	.18	.18	.65
Corner Fittings....." 409, "	.50	.75	.75	3.00
Rosettes....." 410, "	.08	.15	.15	.50

I will furnish estimate for rail complete with fittings, upon receipt of specifications.

THORNTON N. MOTLEY, NEW YORK.

## CAST IRON STEAM FITTINGS.

BRANCH TEE, PLAIN.



Fig. 411.

SINGLE HOOK.



Fig. 413.

BRANCH TEE, Side Outlet.



Fig. 416.

HOOK PLATE.



Fig. 417.

COIL STAND.

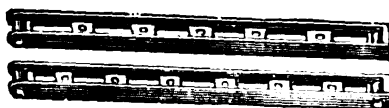


Fig. 414.

EXPANSION PLATE.



Fig. 418.

RING PLATE.



Fig. 419.

BRANCH TEE, Large Run.



Fig. 412.

SINGLE RING.



Fig. 415.

BRANCH TEE, Back Outlet.



Fig. 420.

## BRANCH TEES OR MANIFOLDS.

Number of Outlets	2	3	4	5	6	7	8	9	10	12
3 in. Outlets, 2 1/2 in. Centres, { 1 in. or 1 1/4 in. Run	\$0.50	.65	.80	.95	1.10	1.35	1.50	1.65	1.85	2.50
1 1/2 in. Run	.65	.85	1.05	1.15	1.30	1.65	2.00	2.50	3.00	
1 in. Outlets, 2 1/2 in. Centres, { 1 in. or 1 1/4 in. Run	.70	.80	.95	1.10	1.35	2.05	2.35	2.55	2.85	3.75
1 1/2 in. Run	.75	.90	1.05	1.20	1.50	2.20	2.50	2.80	3.15	4.00
2 in. Run	1.00	1.20	1.60	1.80	2.00	2.40	2.80	3.30	4.00	4.75
2 1/2 in. Run	2.10	2.50	2.90	3.25	3.60	4.00	4.50	5.00	5.50	6.00
1 in. Outlets, 2 1/2 in. Centres, { Run Tapped to order	1.10	1.35	1.75	1.90	2.10	2.50	3.00	3.50	4.25	5.00
Extra Heavy Pattern										
1 1/4 in. Outlets, 3 in. Centres, { 1 1/4 in. Run	1.20	1.60	2.00	2.40	2.80	3.20	3.60	4.00	4.40	4.80
2 in. Run	1.40	1.85	2.45	2.90	3.40	3.90	4.40	5.00	5.50	6.00
1 1/2 in. Outlets, 3 1/2 in. Centres, 2 in. Run	1.75	2.25	2.75	3.25	3.75	4.25	4.75	5.50	6.00	6.50

Back or Side Outlets charged as an additional front outlet. All Threads will be right hand when not ordered otherwise. Branch Tees with any number of outlets, either cast or wrought iron, made to order.

Right and Left and Left Hand Fittings, not specified on preceding lists, will be charged 15 per cent. more than Right Hand Fittings.

## EXTENSION PIPE HANGERS.

Sizes, inches	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6
Each	\$0.15	.15	.18	.18	.20	.22	.25	.30	.35	.40	.50

## HOOK PLATES, COIL STANDS, ETC.

Number of Pipes	1	2	3	4	5	6	7	8	9	10	11	12
3 in. each, \$0.07	.12	.16	.20	.24	.28	.32	.36	.43	.50	.60	.70	
Hook Plates, { 1 1/4 in. " "	.09	.15	.21	.27	.32	.40	.48	.56	.65	.70	.80	1.00
1 1/2 in. " "	.10	.20	.30	.40	.50	.65	.75	.80	.95	1.05	1.15	1.25
2 in. " "	.20	.40	.60	.80	1.00	1.20	1.40	1.60	1.80	2.00	2.20	2.40
Ring Plates, { 3 in. " "	.13	.22	.30	.40	.50	.60	.70	.80	.95	1.15	1.35	1.50
1 1/4 in. " "	.15	.25	.35	.45	.55	.65	.75	.85	1.00	1.20	1.40	1.60
Expansion Plates, { 3 in. " "	.10	.16	.24	.34	.40	.50	.60	.70	.80	.90	1.00	1.10
1 1/4 in. " "	.12	.20	.27	.38	.45	.55	.65	.75	.85	.95	1.10	1.20
Coil Stands, { 3 in. per pair	.15	.30	.38	.50	.65	.75	.90	1.05	1.20	1.35	1.50	1.75
1 in. " "	.50	.65	.75	.85	.95	1.10	1.25	1.50	1.75	2.00	2.25	2.50

## OFFSET HOOK PLATES.

Number of Hooks	3	4	5	6	7	8	9	10
For 1 inch Pipe, 2 1/2 Centres, each, \$0.25	.40	.45	.50	.55	.60	.70	.80	1.10

## FLOOR PLATES.

Sizes, inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6
Each	\$0.08	.10	.12	.15	.20	.25	.35	.40	.50	.65	.80	1.00

## CEILING PLATES.

Sizes, inches	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6
Each	\$0.14	.18	.24	.32	.40	.50	.60	.70	.80	.90	1.00

## ORNAMENTAL IRON STEAM FITTINGS.

ELBOW.

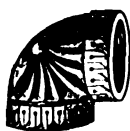


Fig. 421.

Elbows, 1 inch.  
Price each, \$0.30

REDUCING ELBOW.



Fig. 422.

Reducing Elbows, 1 x 1 1/4 inch.  
Price each, \$0.35

ROSETTE PLATE.



Fig. 423.

Rosette Plate { No. Pipes, 2 4 6 8 10 12 14  
For 1 in. Pipe, { Price each, \$0.40 .80 .90 1.20 1.40 1.80 2.00

RETURN BEND.

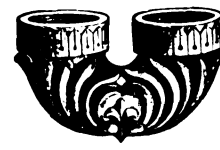


Fig. 424.

Return Bends, 1 inch.  
2 1/2 ins., centre to centre, each, \$0.45

With the above Ornamental Fittings, very handsome wall coils of one inch wrought pipe may be built, painted in some harmonious tint, with the raised ornaments, finished in bronze. These fittings produce a very pleasing effect at a small advance on cost of the plain ones commonly used.

## STEAM HEATING COILS.

BOX COIL.

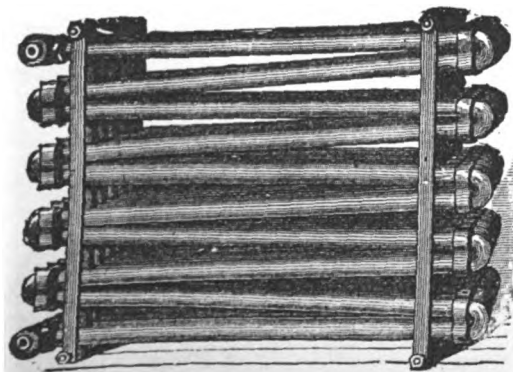


Fig. 425.

Any shape, style or size made to order.  
Prices on application.

HEATER COIL.

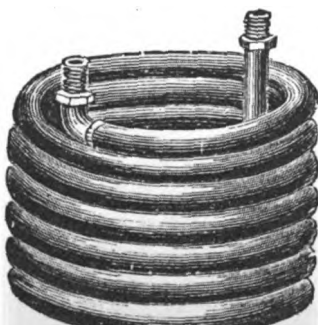


Fig. 426.

Size of Pipe, inch. 1/2 3/4 1 1 1/4 1 1/2 2  
Price per foot \$0.36 .46 .57 .76 1.00 1.25

Coils for Stills, Soap Kettles, Furnaces, etc., made to order any size and shape. Prices on application.

WALL COIL.

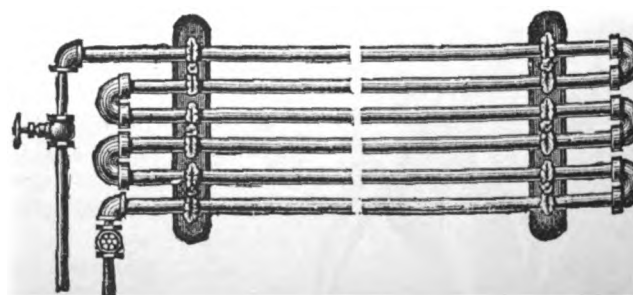
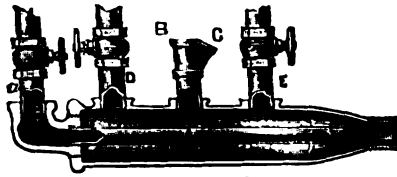


Fig. 427.

Any size made to order.  
Prices on application.

## PATENT SUCTION FITTING.



This fitting stops all noise in radiators or other heating apparatus. By using same you increase the circulation and get from fifteen to twenty degrees more heat with the same quantity of steam than you could without it.

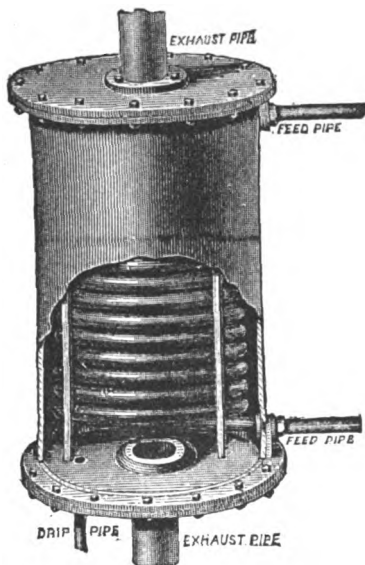
No. 1, 1 in. Outlet, 1 in. Drain Pipes, and $\frac{3}{4}$ in. for Suction or Feed Pipe.....	each, \$12.00
No. 2, $1\frac{1}{2}$ in. Outlet, $1\frac{1}{4}$ in. Drain Pipes, and 1 in. for Suction or Feed Pipe.....	each, 15.00
No. 3, 2 in. Outlet, $1\frac{1}{2}$ in. Drain Pipes, and $1\frac{1}{4}$ in. for Suction or Feed Pipe.....	each, 18.00

The prices of above fittings are so low that it can be used on all heating apparatus profitably, as in most cases one will work all the pipes in a building.

- |   |       |         |
|---|-------|---------|
| No. 1, 1 in. Outlet, 1 in. Drain Pipes, and $\frac{3}{4}$ in. for Suction or Feed Pipe.....               | each, | \$12.00 |
| No. 2, $1\frac{1}{2}$ in. Outlet, $1\frac{1}{4}$ in. Drain Pipes, and 1 in. for Suction or Feed Pipe..... | each, | 15.00   |
| No. 3, 2 in. Outlet, $1\frac{1}{2}$ in. Drain Pipes, and $1\frac{1}{4}$ in. for Suction or Feed Pipe..... | each, | 18.00   |

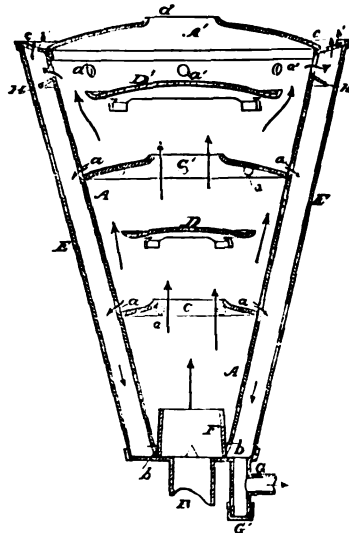
The prices of above fittings are so low that it can be used on all heating apparatus profitably, as in most cases one will work all the pipes in a building.

## NATIONAL FEED WATER HEATER.



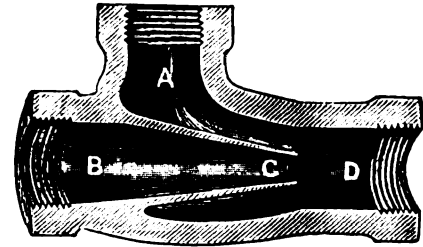
The National Heater consists of seamless drawn brass tubes contained in an iron shell. The feed water for the boiler passing through the brass coil is heated up to 206° or 212° Fahrenheit by the exhaust steam from the engine. Coils are connected by special fittings into one flow of feed water both at the inlet and outlet.

**CONDENSER HEAD.**



For 2 in. Iron Pipe .....	each,	\$25 00
" 3 " " .....	"	30.00
" 4 " " .....	"	40.00
" 5 " " .....	"	50.00
" 6 " " .....	"	60.00
" 8 " " .....	"	85.00
" 10 " " .....	"	120.00
" 12 " " .....	"	150.00

### PATENT SUCTION TEE.



**The Suction Tee will make all bad jobs of steam heating work well and stop the snapping and backing up of one return on another.**

The Suction Tee can also be used as an ejector for raising or forcing water, and as a bilge pump on vessels.

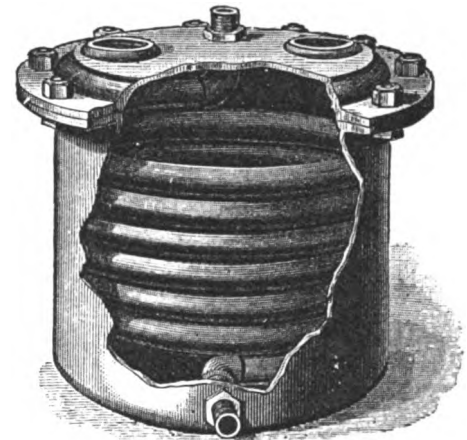
Sizes, inches.....	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2
Each.....	\$1.00	1.25	1.50	2.00

**Description, Condenser Head, Fig. 429.**

**This Head can be used on all exhaust pipes, as it keeps the roof perfectly dry and prevents the accumulation of ice, and avoids spattering of pavements and buildings with water.**

The double case form can be seen at once to give it great advantages over all others in increased surface for condensation.

### FEED WATER HEATER.



### Prices, National Feed Water Heaters.

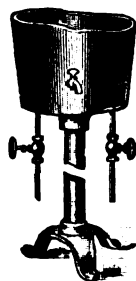
**Fig. 431.**

Nos.	Horse Power.	Diameter of	Diameter of Ex-	Dimensions of		Price, each.
		Feed Pipe.	haust Pipe.	Height.	Diameter.	
		Inches.	Inches.	Inches.	Inches.	
1	8	1 <sub>2</sub>	2	11	11	\$28.00.
2	12	1 <sub>2</sub>	2 <sub>1</sub> <sub>2</sub>	17	11	40.00.
3	20	3 <sub>4</sub>	2 <sub>1</sub> <sub>2</sub>	16	16	55.00.
4	25	1	3	19	19	70.00.
5	30	1	4	23	20	80.00.
6	40	1	4	25	20	100.00.
7	50	1	4	31	20	140.00.
8	60	1	4	36	20	170.00.
9	80	1	4	41	20	190.00.
10	100	1 or 1 <sub>1</sub> <sub>4</sub>	5	52	20	220.00.
11	150	1 <sub>1</sub> <sub>2</sub>	5	52	20	400.00.
12	200	1 <sub>1</sub> <sub>2</sub> or 2	8	58	20	480.00.
13	300	2	10	52	42	600.00.
14	400	2 or 2 <sub>1</sub> <sub>2</sub>	10	64	42	800.00.
15	500	2 or 2 <sub>1</sub> <sub>2</sub>	10	76	42	1000.00.
15 <sub>1</sub> <sub>2</sub>	800	3	12	88	42	1700.00.
16	1000	3	12	88	56	2500.00.
17	2000	4 <sub>1</sub> <sub>2</sub>	16	100	70	3800.00.

### Cast Iron with Wrought Iron Coil.

Size of Pipe, inches,	3/4	1	1 1/4	1 1/2	2
Diam. of Cylinder "	12 1/4	14 1/4	16 3/4	20 1/4	24
Height "	12	14	16 1/2	20	24
Ft. of Pipe in Coil, "	15	17	24	35	46
Price.....each,	\$20.00	30.00	45.00	80.00	130.00

## IMPROVED STEAM GLUE HEATERS.



The Single Heaters, Fig. 433, are intended for use on bench where each man has his private supply of glue, or they can be arranged with stand, as shown in Fig. 434, when desired. They can be connected either through opposite sides for feed and waste pipes, or both pipes may enter from below by removing the plugs from bottom outlets, and closing outlets in sides. When desired, any number of these Single Pot Heaters can be connected together in a continuous row, or in a system of two or more rows connected with pipes, as shown in Fig. 435.

Valves shown in cuts are *not* included in prices, but are illustrated to show method of connecting heaters.

All sizes with stand or feet are made of the same height, viz., 30 inches.

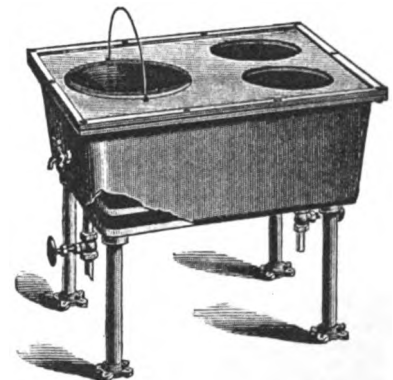


### Prices, Glue Heaters.

Size 00.—Takes single pot. Either 5 in. or 6 in .....	each, \$5.50
Extra for Stand, Fig. 434, 40c.	
Size 0.—Takes single pot. Either 8 in. or 10 in .....	each, \$8.50
Extra for Stand, Fig. 434, 60c.	
Size A.—14 in. x 14 in. x 13 in. deep	
No. 1 takes 2 5-in. pots. No. 2 takes 1 5-in. and 1 6-in. pot.	} Each.
No. 3 takes 1 8-in. pot. No. 4 takes 1 10-in. pot.	
	\$10.00
Size B.—20 in. x 14 in. x 12 in. deep	
No. 1 takes 3 5-in. pots. No. 2 takes 1 8-in. and 1 6-in. pot.	} Each.
No. 3 takes 3 6-in. pots. No. 4 takes 1 8-in. and 1 5-in. pot.	
No. 5 takes 2 6-in. pots	\$15.00
Size C.—24 in. x 20 in. x 12 in. deep	
No. 1 takes 6 5-in. pots. No. 4 takes 1 10-in. and 3 5-in. pots.	} Each.
No. 2 takes 6 6-in. pots. No. 5 takes 1 10-in. and 1 8-in. pot	
No. 3 takes 1 10-in. and 3 6-in. pots.	
No. 6 takes 1 8-in. and 4 5-in. pots	\$20.00

**Above prices are for Heaters without pots.**

**NOTE.**—When ordering Heaters please be careful to state whether or not pots are wanted to accompany them.



### Prices, Glue Pots.

Sizes, inches.....	5	6	8	10
Copper.....each,	\$1.00	1.50	2.25	3.00
Plain Iron....."	.60	.80	1.30	1.75
Enameled....."	.80	1.20	1.75	2.75

These Glue Heaters, sizes A, B, C, without top plate, make admirable steam kettles for general boiling purposes, and have the following capacities:

A, 4½ gallons. B, 6 gallons. C, 11 gallons.  
I can furnish these with heavy tin covers  
when desired. All Heaters are tested under 80  
pounds pressure.

THORNTON N. MOTLEY, NEW YORK.

## THE HANDREN PATENT STEAM TRAP.

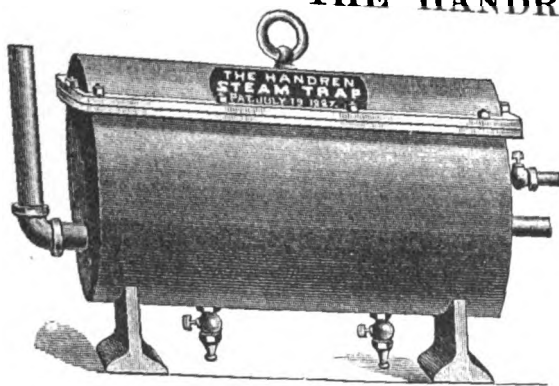


Fig. 437.

This Trap will drain a larger area of pipe surface, in proportion to its size and cost, than any trap made. It frees the water of condensation entirely from sediment, scum and oil, and the trap itself can be kept clean and continuously in operation.

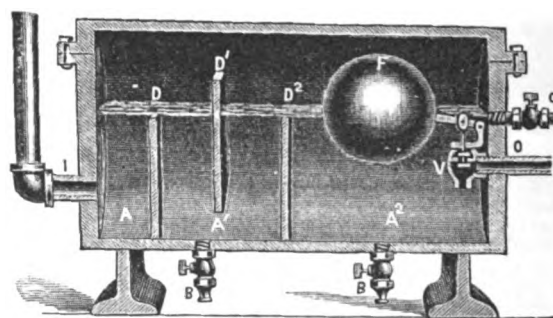


Fig. 438.

The Handren Trap is made with three transverse partitions, D, D<sup>1</sup> and D<sup>2</sup>, of which the partition D extends from the bottom of trap nearly to top. The next partition, D<sup>1</sup>, extends from the top to within a short distance of the bottom of trap, thus leaving a passage between the lower end of partition and bottom of trap. The next partition, D<sup>2</sup>, again extends upward in the same manner as the first partition, D.

The steam and condensed water pass first from the inlet pipe I into the space A; when the water rises above the partition D, it flows over same into space A<sup>1</sup>; again when the water rises above the partition D<sup>2</sup>, it flows over same into space A<sup>2</sup>. When the water in space A<sup>2</sup> rises above a certain point, it carries with it the float F, thus opening valve V, allowing the water to pass out through outlet pipe O. The sediment accumulating in the bottom of trap can be blown out of blow-off cocks B B; the scum and oil floating on the surface of the water can be blown out of blow-off cock C.

### Prices and Capacity.

No.	Length of Shell.	Diameter of Shell.	Size of Outlet.	Size of Inlet.	Will Drain of 1 inch Pipe.	Each.
1	18 inches.	9 inches.	1/2 inch.	1 inch.	3000 feet.	\$40.00
2	20 "	12 "	1 "	2 "	7000 "	60.00
3	24 "	15 "	1 1/2 "	3 "	12000 "	80.00

## BARR'S PATENT ELLIPTIC STEAM TRAP.

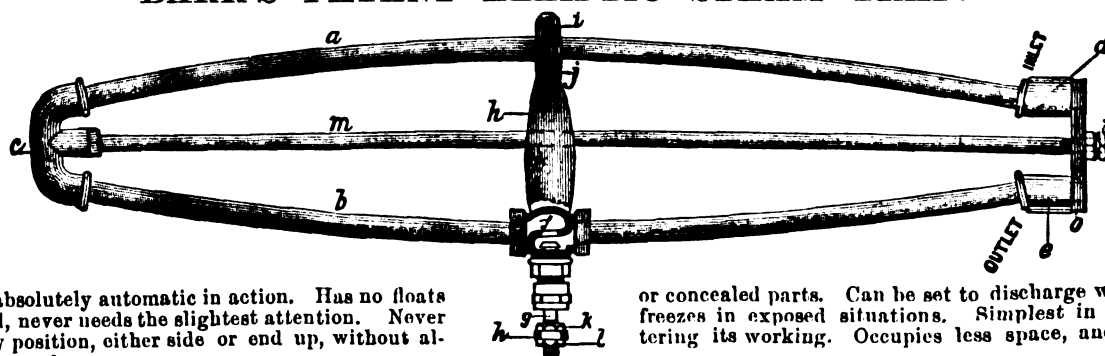


Fig. 439.

This Steam Trap is absolutely automatic in action. Has no floats perature. Once adjusted, never needs the slightest attention. Never made. Can be set in any position, either side or end up, without al- used in situations where no other can.

or concealed parts. Can be set to discharge water at any desired tem- freezes in exposed situations. Simplest in construction of any trap terying its working. Occupies less space, and, being so light, can be

### Prices and Capacity.

No.	Size of Connections.	Size of Valve.	Length.	Will Drain of 1 inch Pipe.	Each.	No.	Size of Connections.	Size of Valve.	Length.	Each.
1	3/8 in.	1/4 in.	31 in.	1500 ft.	\$15.00	5	1 1/2 in.	1 1/2 in.	6 feet.	\$50.00
2	1/2 "	3/8 "	34 "	3000 "	20.00	This size will be found peculiarly well adapted to mining pumps, and other machinery, the location of which is such as to cause trouble from the large amount of water in pipes, and will secure a constant supply of dry steam.				
3	3/4 "	1/2 "	39 "	6000 "	25.00					
4	1 "	3/4 "	45 "	8000 "	30.00					

## HAWE'S IMPROVED STEAM TRAP.

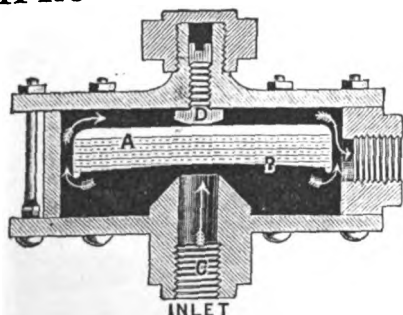


Fig. 440.

### Description.

The use of this Trap insures a great saving in fuel, and is a guarantee against water freezing in pipes, as it is always open when cold.

Perfect circulation insured.

### Prices and Capacity.

No. of Steam Trap	1	2	3	4
Size pipe tapped for...ins.	1/2	3/4	1	1 1/4
No. of feet it will drain of 1 inch pipe	500	1000	2000	4000
Price... each	\$10.00	15.00	20.00	25.00

## ALBANY GRAVITATING RETURN STEAM TRAP.

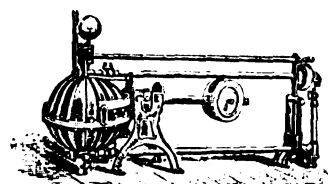


Fig. 441.

### Description Albany Traps, Figs. 441 and 442.

These Traps automatically drain the water of condensation from heating coils, and return same to the boiler, whether the coils are above or below the water level in boiler, thus doing away with pumps and other mechanical devices for such purposes. The return steam traps are valuable for returning the water of condensation under pressure back into the boiler. They also make a great saving in fuel.

### Prices and Capacity, Figs. 441 and 442.

No. 1, Gravitating or Bucket Trap, capacity, 7000 feet 1 inch pipe	each, \$150.00
" 2, " " " 3500 " 1 " "	" 100.00

### Prices Drip Tanks.

No. 1, for No. 1 Trap	each, \$10.00	No. 2, for No. 2 Trap	each, \$10.00
-----------------------	---------------	-----------------------	---------------

### Prices Equalizing Valves.

No. 1, for Gravitating Trap	each, \$10.00	No. 1, for Bucket Trap	each, \$10.00
" 2, " " "	" 10.00	" 2, " " "	" 8.00

## ALBANY BUCKET RETURN TRAP.

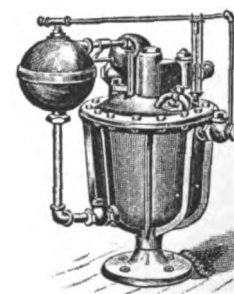


Fig. 442.



# CHAMPION STEAM TRAP AND BOILER FEEDER.

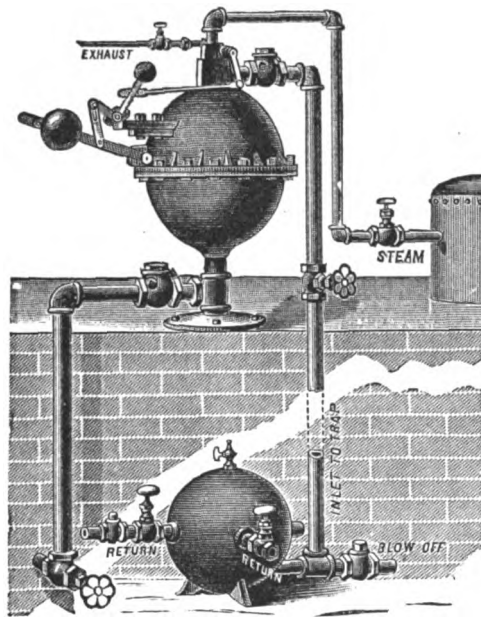


Fig. 443.

## Description, Champion Trap.

Will return condensation to boilers from steam heaters of all kinds, drying cylinders, evaporating pans, etc., whether above or below the boiler. It is operated by the buoyancy of a cast iron ball, alternately surrounded by water, and connected by a spindle to a lever on the outside, thereby operating a steam and exhaust valve both in one chamber, and placed on top of the trap in such a position as to exhaust freely when desired, and reduce the pressure so as to enable the trap to take water immediately and prevent it from becoming air bound. The trap will also take condensation from two or more return pipes, on some of which the pressure may be as low as five pounds and others as high as one hundred pounds without causing the least obstruction to the return pipe upon which the pressure is low.

## Prices and Capacity.

No. 1, will drain 4000 to 5000 feet 1 inch pipe	each, \$100.00
No. 2, " 8000 to 10000 " 1 "	" 150.00
No. 3, " 15000 to 20000 " 1 "	" 200.00

Larger sizes to order.  
Receivers extra, each, No. 1, \$5.00 No. 2, \$8.00 No. 3, \$12.00.

# CHAPMAN'S STEAM TRAP, SELF REGULATING.

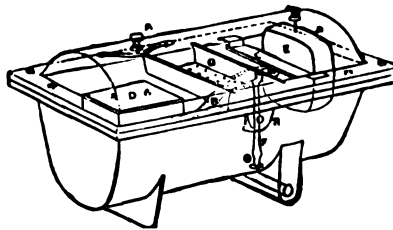


Fig. 444.

## Prices and Capacity.

No. 1 will drain 1500 feet 1 inch pipe	each, \$25.00
No. 2 " 3000 " 1 "	" 35.00
No. 3 " 7000 " 1 "	" 60.00
No. 4 " 10000 " 1 "	" 70.00

All the above sizes are calculated to work easily at any steam pressure from 1 lb. to 75 lbs. at the Trap.

State in ordering where pressure is over 75 lbs. The shell will stand any boiler pressure, but for extra pressure let me know, then I will regulate the valve to suit.

The inlet and outlet of the sizes are as follows:

No. 1 inlet and outlet standard gas threads, 1 inch.
No. 2 " " " 1 1/4 "
No. 3 " " " 1 1/2 "
No. 4 " " " 2 "

# PRATT'S STEAM TRAP AND BOILER FEEDER.

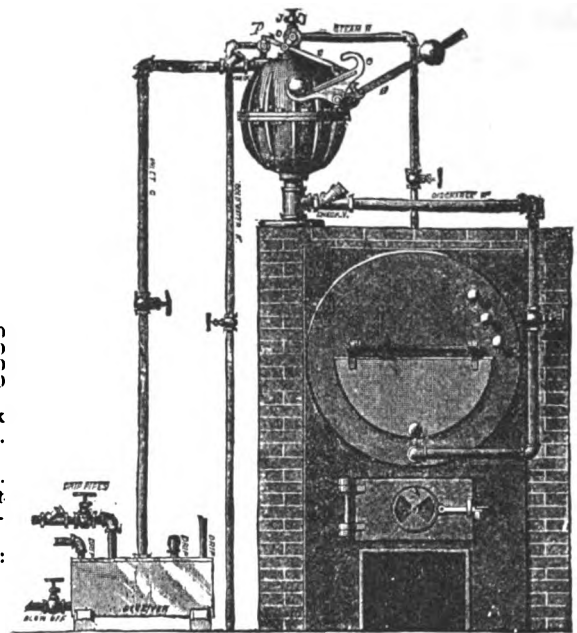


Fig. 445.

## Description, Pratt's Trap.

A is the receiving vessel, inside of which is a water-tight cast iron float suspended on one end of a lever, the other end of which is fast to a spindle which goes through a stuffing box to the outside of A, and carries on its outer end the lever B, with weight which counterpoises half the weight of float. C is a rocking lever with a weight which rolls to either end alternately, as the feeder fills and is emptied of water, the rolling ball acting at exactly the same point every time, to open and close the steam valve D. E is a connecting rod between lever of valve D and the rocking lever C. F is the feed pipe to boilers. H is the pipe from the boilers direct to the steam valve D. This pipe must not be taken from other pipes from which steam is being used for other purposes. J is an air cock to allow air to escape when first starting up.

## Prices and Capacity.

No. 1 will drain 4000 to 5000 feet 1 inch pipe	each, \$100.00
No. 2 " 8000 to 10000 " 1 "	" 150.00
No. 3 " 15000 to 20000 " 1 "	" 200.00
No. 4 " 30000 to 40000 " 1 "	" 300.00

Check Valves extra.  
Receivers extra, each, No. 1, \$8.00 No. 2, \$10.00 No. 3, \$12.00.

# EDWARDS' STEAM TRAP, With Non-collapsing Float.

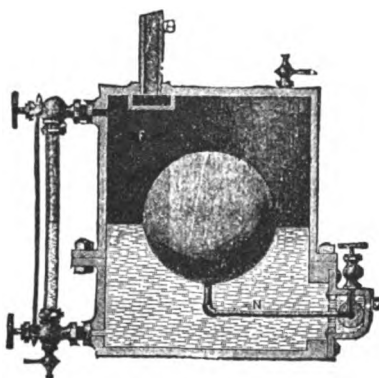


Fig. 446.

The Float in this Trap is made of cast brass, in halves, and screwed together. The water from condensation of moisture inside the float is free to pass out through the tubular stem and the channel in the valve, therefore there is no collapsing of the float under the highest steam pressure.

## Prices and Capacity.

### Without Water Gauge.

No. 1 will drain 7000 feet 1 inch pipe	each, \$30.00
No. 2 " 16000 " 1 "	" 40.00
No. 3 " 60000 " 1 "	" 75.00

Water Gauges extra " 3.00

# NASON'S STEAM TRAP.

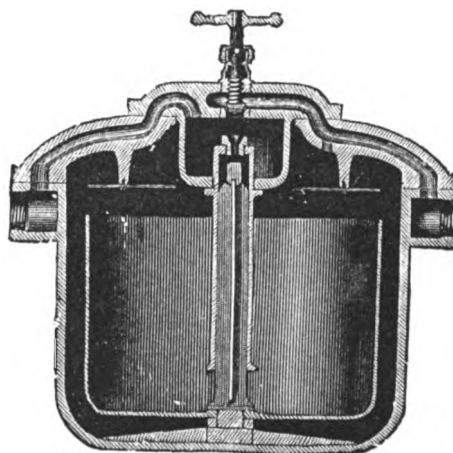


Fig. 447.

The advantage of this Trap, as shown in the above cut, consists in placing the float valve and its attachments near the top of the float, where they are removed as far as possible from all refuse matters, which become detached from the steam pipes and coils and find their way into the steam trap.

## Prices and Capacity.

No. of Steam Trap	1	2	3	4	5
Size of pipe connections, in.	1/2	3/4	1	1 1/4	1 1/2
Diameter of Cylinder	8	10 1/2	12	14	18
Height to top of cover	8	10	12	14	15 1/2
Greatest number of sq. ft. of surface to which it should be applied	350	900	1400	2000	3500
Price	each, \$16.00	20.00	27.50	35.00	65.00

# CURTIS' STEAM TRAP, Improved and Simplified.

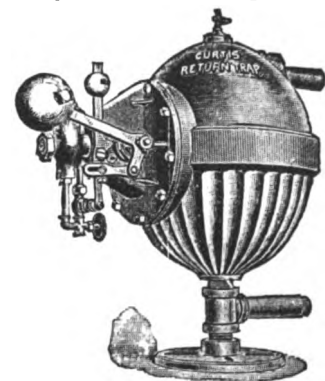


Fig. 448.

This Return Steam Trap automatically drain the water of condensation direct back to boiler from heating coils, steam radiators, drying machines, etc.

In heating by direct steam there is a large amount of heat wasted even when the condensation is conveyed into an open tank, while in the use of this Return Steam Trap there is no outlet for the steam used in heating, etc., except back into the boiler from which it came, therefore there can be no loss of heat except by radiation from the heating surfaces, all the condensation being returned to boiler at high temperature.

## Prices and Capacity.

No. 1 will drain 5000 feet of 1 inch pipe	each, \$100.00
No. 2, " 10000 " 1 "	" 150.00
No. 3, " 20000 " 1 "	" 200.00
No. 4, " 25000 " 1 "	" 250.00

## Prices Receivers.

No. 1, each, \$8.00 No. 2, each, \$10.00 No. 3, each, \$12.00

# THE "WASS" GREASE, AIR AND MUD EXTRACTOR.

THORNTON N. MOTLEY, SOLE AGENT.

CLASS A.

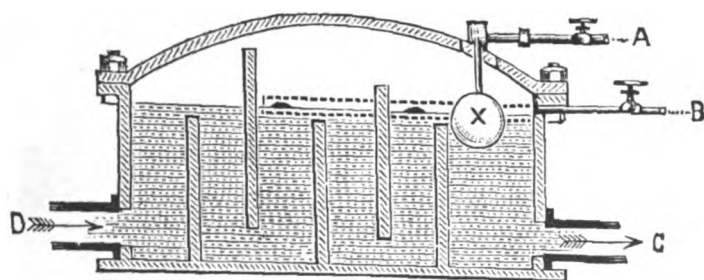


Fig. 449.

CLASS B.

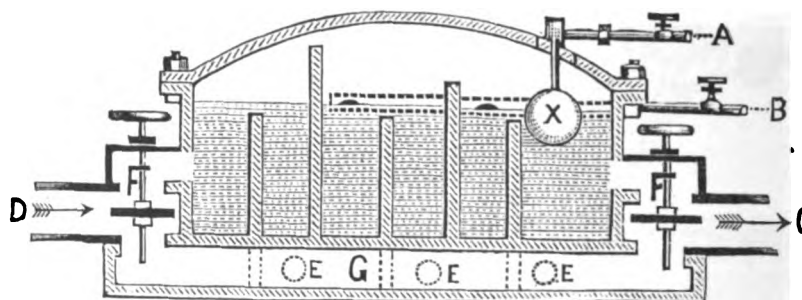


Fig. 450.

## EXPLANATION OF PARTS.

A.—Air Discharge.  
B.—Oil Discharge.

C.—Exit to Boiler.  
D.—Entrance from Feed Pump.  
Class A is fitted without By-pass.

F.—Double Valves, shutting Extractor off from feed direct through By-pass pipe G.  
Class B is fitted with By-pass.

X.—Air Valve Float  
E.—Mud Blowers.

The sizes are according to the diameter of the feed pipe.

Prices and specifications furnished on application. In ordering, state horse-power of engine and diameter of feed pipe.

## DESCRIPTION.

THE "WASS" Grease, Air and Mud Extractor (patented) has proved very successful since its introduction.

It was first practically tried on the S. S. "Walla Walla," on a voyage from New York to Portland, Oregon, and was afterwards improved so as to make it almost automatic.

It is of great value where boilers are in use for any length of time without cleaning.

It is invaluable where steam is used for water distillation or other culinary purposes direct from the boiler.

On steamships using cylinder oils with a mineral base (as almost all are,) it is an impossibility to cook with direct steam without the taste of the mineral oil being apparent.

Its advantages are as follows :

**FIRST.** Taking out all the air entering the boilers along with the feed water, thus preventing the pitting action on the internal surface of boilers, tubes, etc., that is in accordance with the theory of the free oxygen contained in the air admitted with the feed water.

**SECOND.** The air being a very poor conductor, and being so much lighter than steam, forms a film or strata above the ebullition line, and by its lower tension causing what is known when carried to a very great degree, as foaming or priming, for when air is in the boiler, it (foaming) always takes place, until carried over into the cylinders by the same action.

**THIRD.** In condensing engines, the air after leaving the cylinders only helps to destroy the vacuum, thus requiring more circulating water or injection, as the case may be, and consequently more air-pump.

**FOURTH.** The great advantage it has in a nest, or battery of boilers, is that when the air is extracted from the feed water they all feed equal and alike, the lighter medium (air) in the other case getting into any boiler at its first opportunity.

Being also a good *Automatic Auricular Safety Apparatus*, as when the feed pumps are working, the air relief reports it at once. The practical experience of the past few years has led most marine engineers to the conclusion that the presence of air in the water contained in a marine boiler is decidedly harmful, the air materially assisting, if not actually originating, the corrosive action on the plates, while it subsequently, after passing through the engines with the steam, tends to impair the vacuum in the condenser.

In marine engines, as ordinarily constructed, the feed pumps have a far larger capacity than is absolutely required, supposing all to be in good order, and under the usual conditions of working they discharge into the boiler with the feed a certain—or rather I should say uncertain—quantity of air, which is drawn in through the pet cocks, etc.

The air separating from the feed water collects in the upper part of the cylindrical vessel, and so long as the air valve is not closed by the rising of the float, escapes through the air valve. If, however, this escape takes place more rapidly than the air enters, the water level rises in the vessel and the float is lifted, thus closing the air valve until a further quantity of air has collected.

The whole apparatus is very simple, and in practice it has been found to answer its purpose well. Now the desirability of separating air and grease from feed water is well understood. See *Engineering* (British,) July 7th, 23d and 28th, and August 11th, 1882, on Boiler Corrosion, etc.

The mud and heavy substances sinking to the bottom of the partitions are blown off during operation.

The extraction of the grease by the Extractor, acts in the same manner as the albumen or other coagulating material does in melting sugar—it arrests all foreign matter on its way to the boilers. Again, the grease, with its foreign matter in suspension, is deposited on surfaces according to its density, it having been known to accumulate to such an extent on the furnace crowns that they collapsed; the lighter particles of it are carried over into the steam pipes, chests, valves, etc. That its most volatile parts have been separated before by the action of the boiler, is shown by the fact that where hot steam and high speed or motion take place very little is deposited, but in receivers, steam heating pipes, low pressure cylinders, steam pumps, exhaust pipes, and pet cocks, the great deposits take place; also when using steam from the main boilers for distilling purposes, or cooking by steam, the oil (if of the general kind now used,) being mineral, or with a mineral base, and cannot be used without having a decided flavor; but by using the Extractor, vegetables, etc., have been cooked in an open steamer with steam from main boilers direct, without the slightest flavor of the oil being detected when the main engines were using a crude petroleum.

The oil discharge is regulated according to circumstances, so as to draw off the grease alone, and by discharging into an open vessel it can be used for other purposes, such as oiling down fronts, etc.

## GLOBE, ANGLE AND CROSS VALVES.

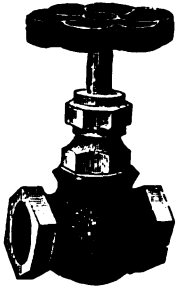
GLOBE VALVE,  
Screwed.

Fig. 451.

ANGLE VALVE,  
Screwed.

Fig. 452.

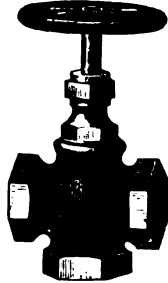
CROSS VALVE,  
Screwed.

Fig. 453.

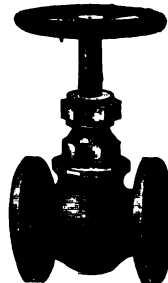
GLOBE VALVE,  
Flanged.

Fig. 454.

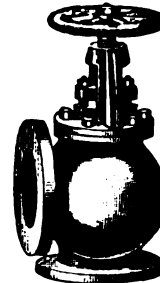
ANGLE VALVE,  
Flanged, with Yoke.

Fig. 455.

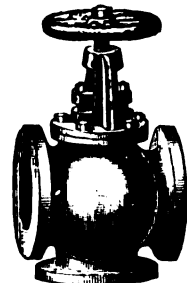
CROSS VALVE,  
Flanged, with Yoke.

Fig. 456.

## STEAM METAL.

Sizes, inches.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Globe or Angle Valves, Screwed.....each,	\$0.60	.60	.75	1.00	1.35	1.80	2.80	3.90	5.90	11.25	16.00	30.00	40.00
" " " Flanged.....	2.00	2.00	2.75	3.50	4.00	5.00	7.00	9.00	14.00	20.00	30.00	45.00	65.00
Cross Valves, Screwed.....	"	.85	1.00	1.50	2.00	2.50	3.50	5.00	8.00	16.00	24.00	45.00	60.00
" " Flanged.....	"	"	"	5.25	6.00	7.00	10.00	14.00	21.00	30.00	45.00	60.00	90.00

## IRON BODY, BRASS MOUNTED.

Sizes, inches.....	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	8	10	12
Globe or Angle Valves, Screwed.....each,	\$2.00	2.50	3.50	5.00	7.50	10.50								
" " " Flanged.....	3.00	3.75	5.00	6.75	9.50	13.50								
" " " Screwed, with Yoke.....	"	"	"	8.00	10.50	14.50	18.00	21.00	28.00	32.00	44.00	85.00	135.00	200.00
" " " Flanged.....	"	"	"	9.75	12.50	17.50	21.50	25.00	32.00	36.00	49.00	91.00	145.00	220.00
Cross Valves, Screwed.....	3.00	3.50	4.75	6.50	10.00	14.00								
" " Flanged.....	4.50	5.50	7.00	9.00	13.00	18.50								
" " Screwed, with Yoke.....	"	"	"	9.50	13.00	18.00	23.00	27.00	35.00	40.00	51.00	105.00	175.00	260.00
" " Flanged.....	"	"	"	12.00	16.00	22.50	28.25	33.00	41.00	46.00	61.50	114.00	190.00	290.00

## CHECK VALVES.

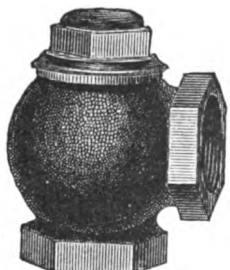
ANGLE,  
Screwed.

Fig. 457.

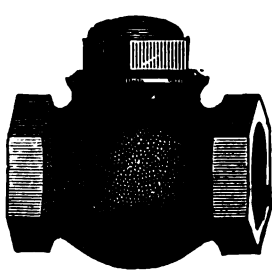
HORIZONTAL,  
Screwed.

Fig. 458.

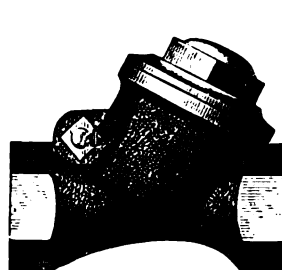
SWING,  
Screwed.

Fig. 459.

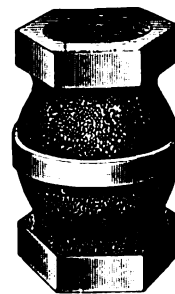
PERPENDICULAR,  
Screwed.

Fig. 460.

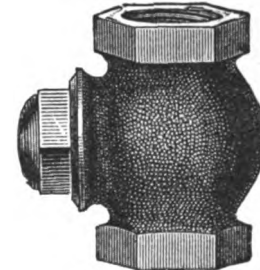
PERPENDICULAR,  
Cap at Side, Screwed.

Fig. 461.

## STEAM METAL.

Sizes, inches.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Check Valves, Angle, Horizontal or Perpendicular, Screwed.....each,	\$0.50	.50	.60	.85	1.15	1.55	2.30	3.25	5.20	10.00	14.00	27.00	36.00
" " Horizontal or Perpendicular, Flanged.....	"	"	"	3.25	3.75	4.50	6.50	8.50	13.00	19.00	28.00	42.00	60.00
" " Perpendicular, Cap on Side, Screwed.....	"	.60	.75	1.00	1.40	1.85	2.85	4.00	6.00	11.25	16.00		
" " Swing, Screwed.....	"	1.25	1.30	1.75	2.25	3.25	4.25	6.25	11.50	16.00			

## IRON BODY, BRASS MOUNTED.

Sizes, inches.....	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	8	10	12
Check Valves, Angle, Horiz'l or Perpendicular, Scr'd.....each,	\$1.50	2.25	2.75	3.75	6.25	9.75	12.75	15.00	20.00	24.00	33.00	65.00	110.00	170.00
" " " Flanged.....	2.50	3.50	4.25	5.50	8.25	12.75	16.25	19.00	24.00	28.00	38.00	71.00	120.00	190.00
" " Perpendicular, Cap on Side, Screwed.....	"	"	"	4.75	7.50	11.25	14.50	17.00	22.00	26.50	36.00	69.00		
" " " Flanged.....	"	"	"	6.50	9.50	14.25	18.00	21.00	26.00	30.50	41.00	75.00		
" " Swing, Screwed or Flanged.....	"	3.25	4.25	6.25	10.00	12.00	16.00	18.00	25.00	32.00	50.00			

## FOOT VALVES AND STRAINERS.

SCREWED.



Fig. 462.

FLANGED.

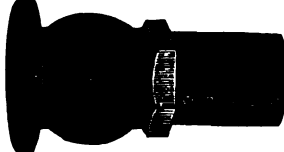


Fig. 463.

IMPROVED.

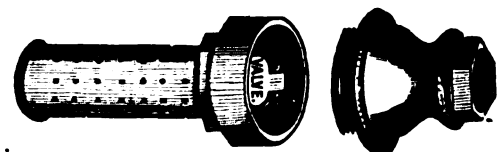
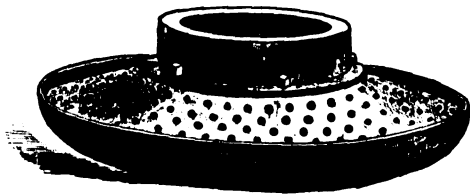


Fig. 464.

Sizes, inches.....	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	8
Foot Valves and Strainers, Brass, Screwed.....each,	\$1.50	2.00	2.75	3.75	5.50	12.00	16.00						
" " " I. B. B. M., Screwed.....	1.25	1.50	1.75	2.50	3.25	4.25	5.50	7.50	10.00	12.00	13.00	24.00	50.00
" " " Flanged.....	2.00	2.50	3.00	4.00	5.00	6.25	8.50	11.00	14.00	16.00	17.00	29.00	56.00
" " Improved, Screwed.....	"	2.00	2.25	2.50	3.00	3.50	4.50	5.00	6.00		8.00	10.00	

**MUSHROOM STRAINER,  
Malleable or Wrought Iron.**



**Fig. 465.**

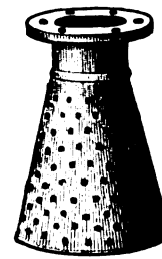
**GALVANIZED WROUGHT IRON STRAINERS.**  
**Nipple Joint.                      Socket Joint.                      Flanged Joint.**



**Fig. 466.**



**Fig. 467.**



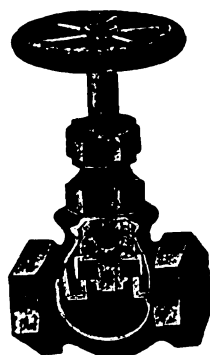
**Fig. 468.**

Diameter, Suction Pipe.....	inches,	1	1½	1½	2	2½	3	4	5	6	7	8	9	10
Black Malleable Iron Nipple Joint	each,	\$0.85	1.10	1.25	1.61	2.05	2.75	5.00	10.00	11.00	17.32	18.22	25.23	26.53
Galvanized " " " " " " " "	"	1.02	1.35	1.50	2.00	2.50	3.41	6.07	12.54	13.60	22.26	23.30	30.00	32.00
Galvanized Wrought Iron Nipple Joint.....	"							9.00	10.50	12.50	18.00	21.00	27.00	37.00

**Fitted with Flange, Socket and Nipple Joints, Suitable for Welded, Cast Iron and Spiral Pressure Pipe.**

<b>Diameter Suction Pipe .....</b>	<b>inches,</b>	<b>1<sub>2</sub></b>	<b>3<sub>4</sub></b>	<b>1</b>	<b>1<sup>1</sup>/<sub>4</sub></b>	<b>1<sup>1</sup>/<sub>2</sub></b>	<b>2</b>	<b>2<sup>1</sup>/<sub>2</sub></b>	<b>3</b>	<b>3<sup>1</sup>/<sub>2</sub></b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
<b>Screw Nipple Joint .....</b>	<b>each,</b>	<b>\$0.60</b>	<b>.70</b>	<b>.85</b>	<b>1.15</b>	<b>1.45</b>	<b>2.00</b>	<b>2.85</b>	<b>3.45</b>	<b>4.60</b>	<b>5.75</b>	<b>6.85</b>	<b>8.00</b>						
<b>Flange or Socket Joint .....</b>	<b>"</b>	<b>.65</b>	<b>.75</b>	<b>.95</b>	<b>1.25</b>	<b>1.60</b>	<b>2.25</b>	<b>3.40</b>	<b>4.25</b>	<b>5.15</b>	<b>6.65</b>	<b>8.00</b>	<b>9.75</b>	<b>11.45</b>	<b>14.90</b>	<b>20.60</b>	<b>23.00</b>	<b>26.30</b>	<b>28.60</b>

The area of the perforation, in each strainer exceeds the area of the suction pipe, and gives full supply of water to the pump  
In ordering, state whether flange, socket or nipple connection; if former, give outside measurement of flange, and if required drilled, send templet.



**Fig. 469.**

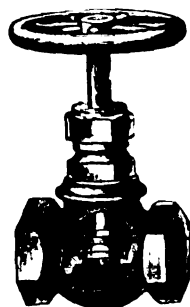
**Best Quality of Steam Metal, with Jenkins' Patent Discs.**

## STEAM METAL.

Sizes, inches .....	1 <sub>4</sub>	3 <sub>8</sub>	1 <sub>2</sub>	3 <sub>4</sub>	1	1 <sub>1</sub> <sub>4</sub>	1 <sub>1</sub> <sub>2</sub>	2	2 <sub>1</sub> <sub>2</sub>	3	
Globe and Angle Valves, Screwed .....	each,	1.10	1.20	1.60	2.20	2.80	4.00	5.50	8.00	15.75	22.00
Cross Valves .....	"			2.25	2.50	3.25	4.75	6.25	9.50		
Check Valves .....	"	1.10	1.20	1.30	1.90	2.60	3.60	5.00	7.50	13.50	20.50

**IRON BODY, BRASS MOUNTED.**

Sizes, inches.....	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12
Globe and Angle Valves, Screwed..... each,					\$7.25	11.00	16.00	19.50	24.00	40.00	48.00	90.00	130.00	185.00
" " " Flanged..... "					8.50	13.00	18.00	21.50	26.00	42.00	50.00	90.00	130.00	185.00
Cross Valves, Screwed..... "						16.00	21.00	26.00	30.00	45.00	58.00			
" " " Flanged..... "						19.00	24.00	29.00	33.00	48.00	62.00			
Check Valves, Screwed..... "						10.50	14.00	17.00	20.00	30.00	40.00			
" " " Flanged..... "						12.50	16.50	20.00	23.00	33.00	43.00			
Safety Valves, Screwed..... "	4.25	4.50	6.25	7.25	10.25	16.75	22.00	31.00	38.00	55.00	73.00			
" " " Flanged..... "					12.25	19.00	25.50	34.00	41.50	62.00	80.00			



**Fig. 470.**

**Best Quality of Steam Metal with Frink's Patent Discs.**

## STEAM METAL.

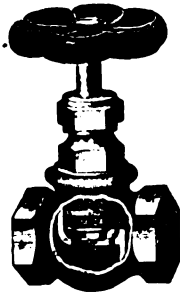
Sizes, inches .....	1 <sub>4</sub>	3 <sub>8</sub>	1 <sub>2</sub>	3 <sub>4</sub>	1	1 1 <sub>4</sub>	1 1 <sub>2</sub>	2	2 1 <sub>2</sub>	3
Globe and Angle Valves, Screwed..... each,	\$0.80	1.00	1.25	1.75	2.50	3.35	4.60	7.00	14.00	20.00
Cross Valves "..... "	1.10	1.25	1.80	2.35	2.90	4.10	5.85	9.00	18.75	28.00
Check Valves "..... "	.75	.85	1.15	1.50	1.95	2.90	4.10	6.20	12.75	18.00

**IRON BODY, BRASS MOUNTED.**

Sizes		2	2½	3	3½	4	5	6	8	10	12
Globe and Angle Valves,	Screwed	\$6.75	10.00	13.50	21.50	25.50	38.00	51.00	97.00	148.00	215.00
" " "	Flanged	8.50	12.00	16.50	25.00	29.50	42.00	56.00	103.00	158.00	235.00
" " "	Screwed	8.25	12.50	17.00	26.50	31.50	46.00	61.00	117.00	188.00	275.00
Cross Valves,	Flanged	10.75	15.50	21.50	31.75	37.50	52.00	68.50	126.00	203.00	305.00
" " "	Screwed	5.50	8.75	12.75	16.25	19.50	30.00	40.00	77.00	123.00	185.00
Check Valves,	Flanged	7.25	10.75	15.75	19.75	23.50	34.00	45.00	83.00	133.00	205.00

Sizes, inches.....	1 <sub>4</sub>	3 <sub>8</sub>	1 <sub>2</sub>	3 <sub>4</sub>	1	1 <sup>1</sup> <sub>4</sub>	1 <sup>1</sup> <sub>2</sub>	2	2 <sup>1</sup> <sub>2</sub>	3	3 <sup>1</sup> <sub>2</sub>	4	5	6	7	8	10	12
Price.....each,	\$0.06	.07	.09	.10	.12	.18	.25	.36	.48	.60	.75	.90	1.20	1.50	1.80	2.10	2.70	3.00

The Discs for these Valves are made of selected sheets of mica, pressed together and fastened in the centre with a metal eye, and then turned down in a lathe to the right dimensions, and finally polished. The metal in a valve will wear sooner than a disc will, and the seat will adjust itself to the shape of the disc and make a perfectly tight joint long after the valve is so badly worn as to be useless with any other disc.

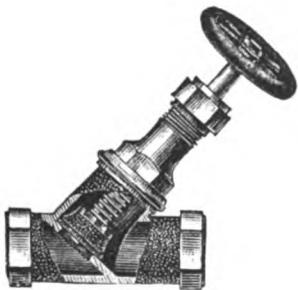


**Fig. 471.**

Sizes, inches.....	1 <sub>8</sub>	1 <sub>4</sub>	3 <sub>8</sub>	1 <sub>2</sub>	3 <sub>4</sub>	1	1 <sub>1</sub> <sub>4</sub>	1 <sub>1</sub> <sub>2</sub>	2	3	
Globe Valves, Screwed, with Mica Discs.....each,	\$0.60	.60	.75	1.00	1.35	1.80	2.80	3.90	5.90	11.25	16.00
Angle Valve, " " " "....."	.60	.60	.75	1.00	1.35	1.80	2.80	3.90	5.90	11.25	16.00
Cross Valves, " " " "....."	.85	.85	1.00	1.50	2.00	2.50	3.50	5.00	8.00	16.00	24.00
Check Valves, " " " "....."	.50	.50	.60	.85	1.15	1.55	2.30	3.25	5.20	10.00	14.00
Safety Valves, " " " "....."	2.00	2.00	2.25	2.75	3.50	5.00	7.00	8.50	12.00	20.00	30.00

Sizes, inches.....	1	1½	1½	2	2½	3	3½	4	4½	5	6	8
Globe Valves, Screwed, with Mica Discs.....	each, \$2.00	2.50	3.50	5.00	7.50	10.50	18.00	21.00	28.00	32.00	44.00	85.00
“ Flanged, “.....	“ 3.00	3.75	5.00	6.75	9.50	13.50	21.50	25.00	32.00	36.00	49.00	91.00
Angle Valves, Screwed, “.....	“ 2.00	2.50	3.50	5.00	7.50	10.50	18.00	21.00	28.00	32.00	44.00	85.00
“ Flanged, “.....	“ 3.00	3.75	5.00	6.75	9.50	13.50	21.50	25.00	32.00	36.00	49.00	91.00
Cross Valves, Screwed, “.....	“ 3.00	3.50	4.75	6.50	10.00	14.00	23.00	27.00	35.00	40.00	54.00	105.00
“ Flanged, “.....	“ 4.50	5.50	7.00	9.00	13.00	18.50	28.25	33.00	41.00	46.00	61.50	114.00
Check Valves, Screwed, “.....	“ 1.50	2.25	2.75	3.75	6.25	9.75	12.75	15.00	20.00	24.00	33.00	65.00
“ Flanged, “.....	“ 2.50	3.50	4.25	5.50	8.25	12.75	16.25	19.00	24.00	28.00	38.00	71.00
Safety Valves, Screwed, “.....	“ 3.50	5.00	6.00	8.00	13.00	18.00	24.00	30.00	36.00	44.00	60.00	145.00
“ Flanged, “.....	“ 5.00	6.75	8.25	10.50	16.00	22.50	29.25	36.00	42.00	50.00	67.50	154.00

<b>Sizes, inches.....</b>	<b>1<sub>4</sub></b>	<b>3<sub>8</sub></b>	<b>1<sub>2</sub></b>	<b>3<sub>4</sub></b>	<b>1</b>	<b>1<sub>1</sub><sub>4</sub></b>	<b>1<sub>1</sub><sub>2</sub></b>	<b>2</b>	<b>2<sub>1</sub><sub>2</sub></b>	<b>3</b>	<b>3<sub>1</sub><sub>2</sub></b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Each.....</b>	<b>\$0.25</b>	<b>.25</b>	<b>.30</b>	<b>.35</b>	<b>.50</b>	<b>.75</b>	<b>1.00</b>	<b>1.50</b>	<b>2.50</b>	<b>3.50</b>	<b>5.00</b>	<b>6.00</b>	<b>7.00</b>	<b>8.00</b>



**Fig. 472.**

Sizes, inches.....	1 <sub>2</sub>	3 <sub>4</sub>	1	1 <sup>1</sup> <sub>4</sub>	1 <sup>1</sup> <sub>2</sub>	2	2 <sup>1</sup> <sub>2</sub>	3	3 <sup>1</sup> <sub>2</sub>	4	5	6	
Steam Metal, with Brass Discs, Screwed.....	each, \$1.75	2.50	3.50	4.25	5.00	7.00	10.00	22.00	36.50	48.00			
" " " Flanged.....	"	3.00	3.75	5.00	6.50	8.00	12.00	22.00	30.00	46.50	63.00		
" " " Jenkins" Patent Discs, Screwed....	"	2.00	3.00	4.00	5.00	6.00	8.50	18.00	25.00	40.00	52.00		
" " " " Flanged ..	"	3.25	4.25	5.50	7.25	9.00	13.50	24.00	33.00	50.00	67.00		
I. B. B. M., Screwed .....	"							11.00	15.00	18.00	21.00	38.00	44.00
" " " Flanged.....	"							13.00	17.50	20.50	23.50	40.50	46.50
" " with " Jenkins " Pat. Discs Screwed.....	"							13.00	18.00	21.50	25.00	42.00	50.00
" " " " Flanged.....	"							15.00	20.50	24.00	27.50	42.50	52.50

**Fig. 473.**

**Fig. 474.**

**Fig. 475.**

Sizes, inches.....	1 1/4	1 1/2	2
Valves..... each,	\$4.00	5.00	7.00
Extra Wheels..... "	1.00	1 00	1.25

Sizes, in.	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Each....	\$1.10	1.35	1.60	2.25	3.25	4.50	7.00

Sizes, in.	3 <sub>8</sub>	1 <sub>2</sub>	3 <sub>4</sub>	1	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>	2
Each...	\$1.40	1.65	1.95	2.65	3.70	5.00	7.75

Sizes, inches.....	1 <sub>2</sub>	3 <sub>4</sub>	1	1 <sup>1</sup> <sub>4</sub>	1 <sup>1</sup> <sub>2</sub>
Each .....	\$1.15	1.60	2.15	3.35	5.00
Sizes, inches .....		2	2 <sup>1</sup> <sub>2</sub>		3
Each .....		\$7.25	13.00		18.50

## MISCELLANEOUS VALVES.

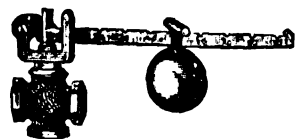
GLOBE SAFETY VALVE,  
Steam Metal, Screwed.

Fig. 476.

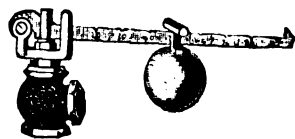
ANGLE SAFETY VALVE,  
Steam Metal, Screwed.

Fig. 477.

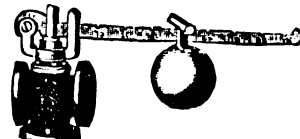
GLOBE SAFETY VALVE,  
Steam Metal, Screwed.

Fig. 478.

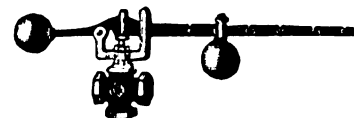
LOW PRESSURE SAFETY VALVE,  
Steam Metal, With Ball Weight.

Fig. 479.

LOW PRESSURE  
SAFETY VALVE,  
With Ball Weight.

Fig. 480.

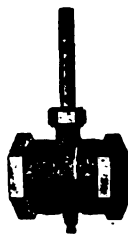
BUTTERFLY  
VALVE,  
Steam Metal.

Fig. 481.

VACUUM  
VALVE,  
Steam Metal.

Fig. 482.

PUMP VALVE,  
Without  
Chamber.

Fig. 483.

PUMP VALVES,  
With Air  
Chamber.

Fig. 484.



Fig. 485.

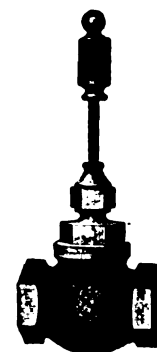
BALANCE  
VALVE.

Fig. 486.

## Prices Valves, Figs. 476 to 486.

Sizes, inches.....	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	8
Safety Valves, Globe or Angle, Steam Metal, Screwed.....	each, \$2.00	2.25	2.75	3.50	5.00	7.00	8.50	12.00	20.00	30.00						
" " " " Flanged.....	"				9.50	13.50	17.50	25.00	34.00	50.00						
" " " " I. B. B. M., Screwed.....	"			2.50	3.50	5.00	6.00	8.00	13.00	18.00	24.00	30.00	36.00	44.00	60.00	145.00
" " " " Flanged.....	"			3.50	5.00	6.75	8.25	10.50	16.00	22.50	29.25	36.00	42.00	50.00	67.50	154.00
" Low Pressure, with bal. weight, Steam Metal, Screwed.....	"	2.25	2.50	3.00	3.75	5.50	7.75	9.50	12.35							
" " " " I. B. B. M., " ".....	"			2.75	3.75	5.25	6.50	8.50	14.00	19.00						
" Low Pressure, with ball weight, Steam Metal, Screwed.....	"		1.50	2.25	3.00	4.00	5.50									
Butterfly Valves, Steam Metal, Screwed.....	"				3.50	4.50	5.50	8.00	11.00	16.00						
" " " " I. B. B. M., " ".....	"				3.00	3.50	4.50	6.00	8.00	12.00	16.00	20.00				
" " " " Flanged.....	"				4.00	4.75	6.00	7.75	10.00	15.00	19.50	24.00				
Vacuum Valves, Steam Metal, Threaded.....	"	1.00	1.25	1.50	2.00	2.50										
Pump Valves, Steam Metal, Plain.....	"			2.00	3.00	4.00	6.00	9.00								
" " " " with Air Chamber.....	"			2.50	3.50	5.00	7.25	10.50								
" " " " with Air Cock.....	"			3.00	4.00	5.50	7.75	11.00								
Balance Valves, Steam Metal, Screwed.....	"				3.50	5.00	7.00	10.00								

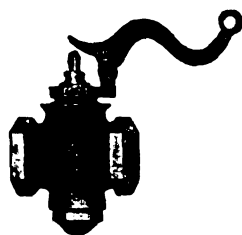
WHISTLE VALVE,  
Steam Metal, Rough.

Fig. 487.

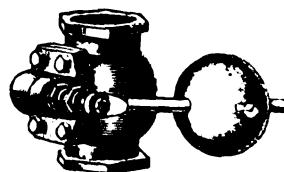
BACK PRESSURE VALVE,  
Iron Body, Brass Mounted.

Fig. 488.

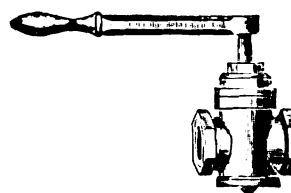
THROTTLE VALVE,  
Steam Metal, Finished.

Fig. 489.

WILSON'S THROTTLE  
VALVE.

Fig. 490.

## Prices Valves, Figs. 487 to 490.

Sizes, inches.....	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	8
Whistle Valve, Steam Metal, Rough, Screwed.....	each, \$2.25	2.75	3.25	4.00	5.50	9.50	20.00	30.00						
" " " " Finished, " ".....	"	3.00	3.50	4.25	5.25	7.00	11.50	23.00	35.00					
Back Pressure Valves, Steam Metal, Screwed.....	"		5.00	7.00	10.00									
" " " " I. B. B. M., " ".....	"				7.00	8.00	10.50	14.50	18.00	21.00	28.00	32.00	44.00	85.00
" " " " Flanged.....	"				8.50	9.75	12.50	17.50	21.50	25.00	32.00	38.00	49.00	91.00
Throttle Valves, Steam Metal, Screwed.....	"	6.50	7.50	9.00	11.00	13.00	20.00	30.00						
" " " " I. B. B. M., " ".....	"			8.00	10.00	12.00	18.00	24.00	32.00	40.00	48.00			
" " " " Flanged.....	"			9.00	11.25	13.50	19.25	26.00	35.00	43.50	52.00			
" Wilson's I. B. B. M., Screwed.....	"				7.00	8.00	8.50	10.00	13.00	16.00	19.00		27.00	30.00
" " " " Flanged.....	"				8.00	9.00	9.75	11.50	15.00	18.50	22.00		30.00	34.00



### ASBESTOS DISC BRASS VALVES.

GLOBE VALVE,  
Screwed.



Fig. 491.

ANGLE VALVE,  
Screwed.



Fig. 492.

CROSS VALVE,  
Screwed.



Fig. 493.

RADIATOR VALVE,  
Wood Wheel.



Fig. 494.

RADIATOR VALVE,  
With Union.

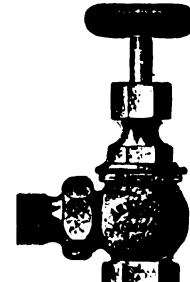


Fig. 495.

These Valves are provided with Vulcanized Asbestos Disc, composed of the fiber of asbestos, which cannot be cracked or broken. The disc is practically indestructible, being composed of a fire proof material to which is added the water-proof vulcanizing material.

The discs are furnished all complete and ready for use and may be put into one of these valves by simply unscrewing the bonnet of the valve, slipping off the old disc, replacing it by a new one and screwing on the bonnet again, requiring only a few moments' time for the entire operation.

The Stuffing Boxes are all packed before they leave the factory with Vulcanized Asbestos Packing, which is very durable and cannot be blown or washed out.

Sizes, inches.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Globe or Angle Valves, Screwed.....each,	\$1.10	1.25	1.60	2.20	2.80	4.00	5.50	8.00	15.75	22.00
" " " Flanged.....					6.00	9.00	11.00	16.50	25.00	34.00
Cross Valves, Screwed.....			2.25	2.50	3.25	4.75	6.25	9.50		
Radiator Valves, Rough, Screwed.....			2.00	2.50	3.20	4.50	6.25	10.50		
" " " Finished.....			2.50	3.00	3.75	5.25	7.25	11.75		
" " " with Union, Rough, Screwed.....			2.75	3.50	4.30	5.85	7.75			
" " " Finished, ".....			3.20	4.00	4.80	6.40	8.75			

### ASBESTOS DISC IRON BODY VALVES.

GLOBE VALVE,  
Brass Hub, Flanged.



Fig. 491 b.

ANGLE VALVE,  
Brass Hub, Screwed.



Fig. 492 a.

GLOBE VALVE,  
With Yoke, Screwed.



Fig. 491 c.

ANGLE VALVE,  
With Yoke, Screwed.



Fig. 492 c.

CROSS VALVE,  
With Yoke, Screwed.



Fig. 493 c.

Sizes, inches.....	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	7	8	10	12
Globe or Angle Valves, Screwed.....each,	\$7.25	11.00	16.00								
" " " Flanged.....	8.50	13.00	18.00								
" " " with Yoke, Screwed.....	10.00	12.00	16.75	19.50	24.00	40.00	48.00	80.00	90.00	130.00	185.00
" " " Flanged.....	11.75	14.00	18.50	21.50	26.00	42.00	50.00	80.00	90.00	130.00	185.00
Cross Valves, Screwed.....		16.00	21.00	26.00	30.00	45.00	58.00				
" " " Flanged.....		19.00	24.00	29.00	33.00	48.00	62.00				

### SWINGING CHECK AND BACK PRESSURE VALVES.

HORIZONTAL  
OR VERTICAL  
CHECK VALVE,  
Brass.



Fig. 496.

ANGLE  
CHECK VALVE,  
Brass.



Fig. 497.

HORIZONTAL  
OR VERTICAL  
CHECK VALVE,  
Iron Body.

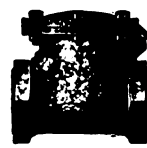


Fig. 498.

ANGLE  
CHECK VALVE,  
Iron Body.



Fig. 499.

STRAIGHTWAY  
BACK PRESSURE  
VALVE,  
Iron Body.

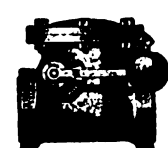


Fig. 500.

The above Valves can be furnished with either Brass, Leather or Asbestos Discs. When ordering, state which kind of discs are wanted.

#### BRASS VALVES.

Sizes, inches.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Horizontal Check Valves, Screwed.....each,	\$1.25	1.25	1.30	1.75	2.25	3.25	4.25	6.25	11.50	16.00
Angle " " ".....			1.30	1.75	2.25	3.25	4.25	6.25		

#### IRON BODY BRASS MOUNTED VALVES.

Sizes, inches.....	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	7	8	10	12
Horizontal or Angle Check Valves, Screwed.....each,	\$6.25	10.00	12.00	16.00	18.00	25.00	32.00	41.00	50.00	65.00	95.00
" " " Flanged.....	6.25	10.00	12.00	16.00	18.00	25.00	32.00	41.00	50.00	65.00	95.00
" " " Bell Ends.....	6.25	10.00	12.00	16.00	18.00	25.00	32.00	41.00	50.00	65.00	95.00
Back Pressure Valves, Screwed.....	6.25	10.00	12.00	16.00	18.00	25.00	32.00	41.00	50.00	65.00	95.00
" " " Flanged.....	6.25	10.00	12.00	16.00	18.00	25.00	32.00	41.00	50.00	65.00	95.00
" " " Bell Ends.....	6.25	10.00	12.00	16.00	18.00	25.00	32.00	41.00	50.00	65.00	95.00

#### PATENT ASBESTOS DISCS.

Sizes, inches.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	7	8	10
Price.....each,	\$0.06	.07	.09	.10	.12	.18	.25	.36	.48	.60	.75	.90	1.20	1.50	1.80	2.10	2.70

**THE ASIITON POP SAFETY VALVES.**  
**VALVES FOR PORTABLE, STATIONARY AND STEAM FIRE ENGINES.**

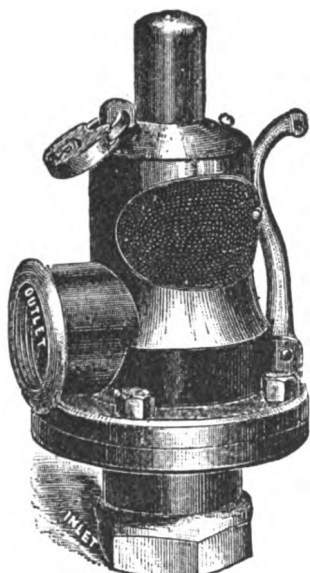


Fig. 501.

Lock-up Valve for portable and all small boilers, where it is desired to convey the escaping steam from the building through side outlet of valve. Made with iron shell and composition mountings.

1 1/4 in.	1 1/2 in.	2 in.
\$12.00	18.00	30.00

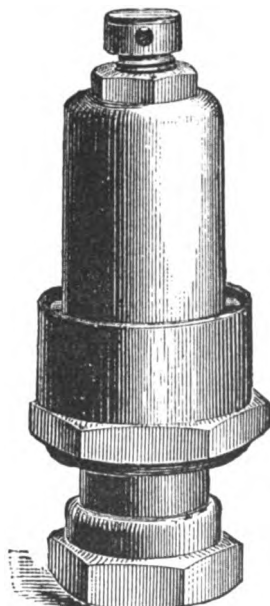


Fig. 502.

Valve for portable, stationary and steam fire engines.

Without cap, lever or lock-up. Made with male or female inlet. Best composition metal, finely finished.

3/4 in.	1 in.	1 1/4 in.	1 1/2 in.	2 in.
\$4.50	6.50	8.50	10.00	23.00

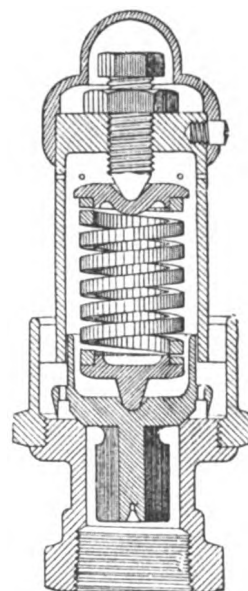


Fig. 503.

Valve for portable, stationary and steam fire engines.

With cap, without lever or lock up. Made with male or female inlet. Best composition metal, finely finished.

3/4 in.	1 in.	1 1/4 in.	1 1/2 in.	2 in.
\$5.00	7.00	9.00	10.50	23.50

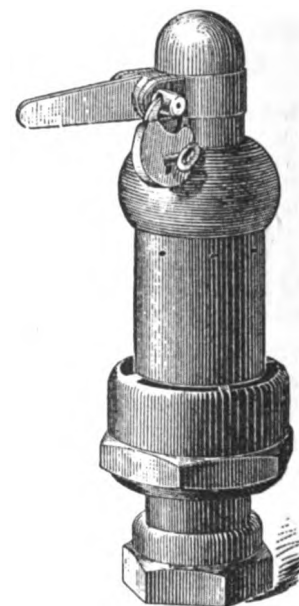


Fig. 504.

Valve for portable, stationary and steam fire engines.

With lever and lock-up attachment. Made with male and female inlet. Best composition metal, finely finished.

1/2 in.	3/4 in.	1 in.	1 1/4 in.	1 1/2 in.	2 in.
\$5.00	6.00	8.00	10.00	12.00	25.00

In ordering above valves state size of boiler and working pressure.

The Pop Safety Valves described above have not been introduced to compete with the cheaper grade of valves, but as an absolute protection to both life and property.

Every valve is set and tested before leaving the works, and to prevent being tampered with each valve is securely locked.

**MARINE POP SAFETY VALVE.**

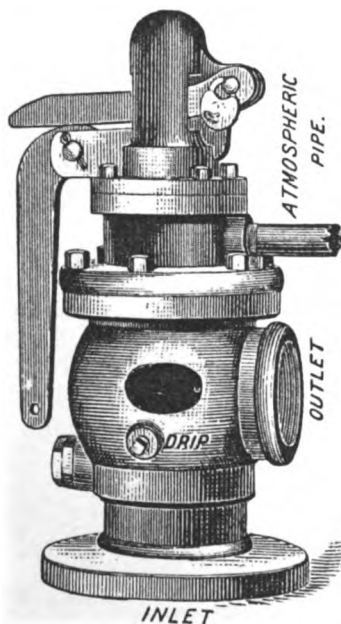


Fig. 505.

This valve has beveled seats at an angle of 45 degrees; and the lever on all our marine valves is made to lift the valve off its seat one-eighth the diameter of the valve opening, as required by the rules and regulations of the United States Board of Supervising Inspectors of Steam Vessels.

Sizes 3/4 to 2 inches are made of composition metal, same style valve as Fig. 504.

Sizes 2 1/2 to 6 inches are made as per cut, Fig. 505.

When ordering valves Figs. 505 and 506 state square feet of grate surface and working pressure; also whether flange or screw end is desired.

**MARINE POP SAFETY VALVE FOR STEAM YACHTS.**

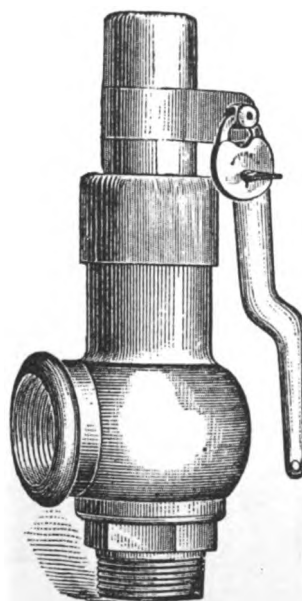


Fig. 506.

This valve is made to conform to the requirements of the United States Government. Its solid construction of composition metal, its fine finish and large relief when in operation make it a most desirable valve for all classes of small marine engines. It is constructed with a side outlet, so that the steam may be carried outside the boiler room.

**Prices Marine "Pop" Safety Valves.**  
**Figs. 505 and 506.**

Sizes.....	3/4 in.	1 in.	1 1/4 in.	1 1/2 in.	2 in.
Each.....	\$7.20	9.00	12.00	14.40	30.00
Sizes.....	2 1/2 in.	3 in.	4 in.	5 in.	6 in.
Flanges.....	8 in.	9 in.	10 in.	12 in.	14 in.
Each.....	\$18.00	66.00	84.00	102.00	150.00

Fig. 507.

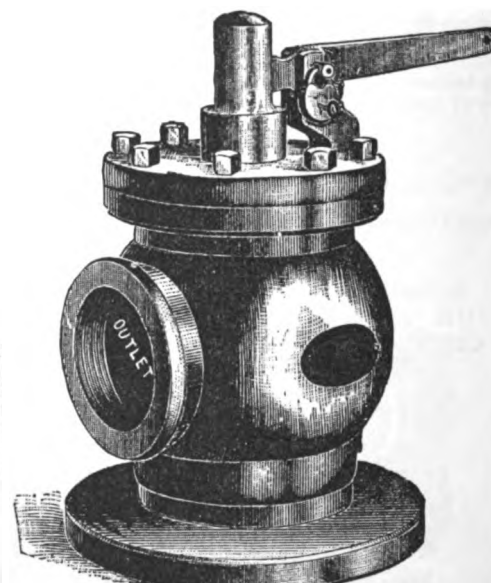


Fig. 508.

This valve gives instant and perfect relief to the boiler. It is impossible to accumulate pressure above the point at which the valve is set. It is sensitive in action and always reliable.

It is so arranged that no tampering or excess of pressure can occur. At the given pressure the valve will rise, and cannot be stopped blowing until relief is given, when the valve will close itself, being perfectly automatic in its working.

Sizes..... 2 1/2 in. 3 in. 4 in. 5 in. 6 in.  
 Flanges... 8 in. 9 in. 10 in. 12 in. 14 in.  
 Each..... \$40.00 55.00 70.00 85.00 125.00

When ordering valves Fig. 508 state size of boiler and working pressure. If flange is required give diameter.

# ASHTON LOCOMOTIVE POP SAFETY VALVE.

THORNTON N. MOTLEY, NEW YORK.

63

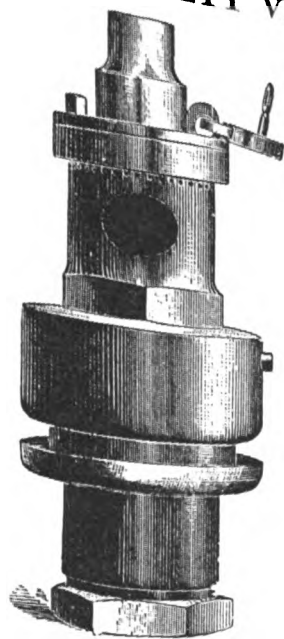


Fig. 500.

## DESCRIPTION, Fig. 500.

Made of best composition metal. It will outwear any valve made, on account of its solid construction, the knife edge of the lip wearing with the seat, thus ensuring long service without re-adjustment or repair.

It is beyond the reach of tampering. The outlet of the valve is so made that no foreign substances, dust or cinders can reach its interior parts to clog or corrode them.

## Prices Fig. 500.

2½ inch, each, \$25.00 3 inch, each, \$30.00

## Locomotive Pop Safety Valve with Lever.

Same construction as Fig. 500, but with lifting attachment whereby all steam can be blown off the boiler.

2½ inch, each, \$30.00.

## SOLID NICKEL SEATED "POP" SAFETY VALVE, For Stationary or Marine Boilers.

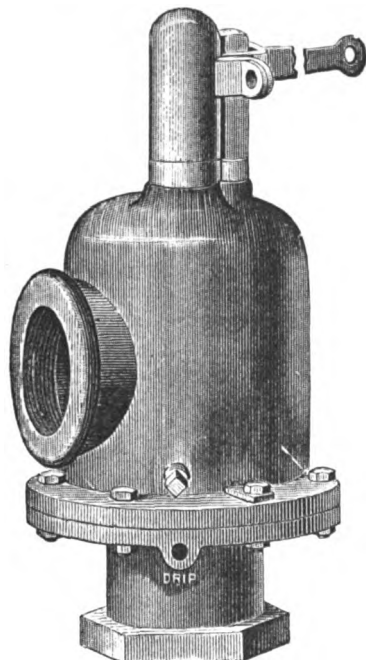


Fig. 512.

## CYLINDER RELIEF VALVE.



Fig. 515.

# ASHTON NOISELESS BLOW-BACK SAFETY VALVE.

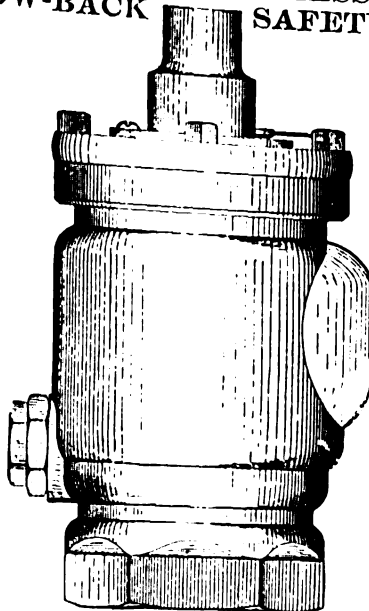


Fig. 510.

## For Locomotives only.

The above is the only noiseless system of boiler relief known. It utilizes the steam by heating the feed-water. On heavy grades a locomotive will make time where it failed to do so without the valve.

Full description and prices on application.

# ASHTON WATER RELIEF VALVE.

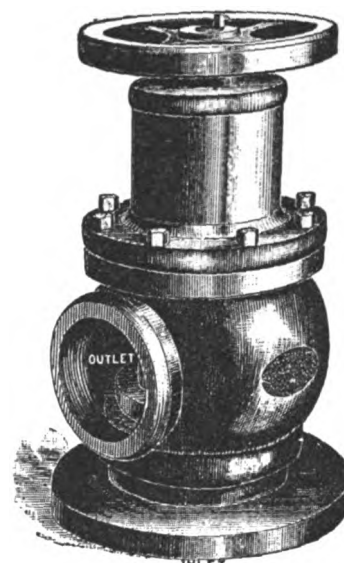


Fig. 511.

## DESCRIPTION, Fig. 511.

Non-corrosive, and always reliable. For steam pumps, stand pipes and hose in buildings.

By its use, the needless flooding of buildings with water is avoided.

It is simple in construction and cannot get out of order, perfectly controlling the pressure on the hose, no matter at what speed or pressure of water the engines or pumps are working.

## Prices Fig. 511.

1½ inch.	2 inch.	2½ inch.	3 inch.
\$30.00	40.00	60.00	75.00
4 inch.	5 inch.	6 inch.	150.00
\$85.00	125.00		

In ordering, state pressure to work at; if flange is required give diameter.

# RICHARDSON'S PATENT LOCOMOTIVE "POP" SAFETY VALVES,

With Adjustable Lip,  
Standard Pattern.

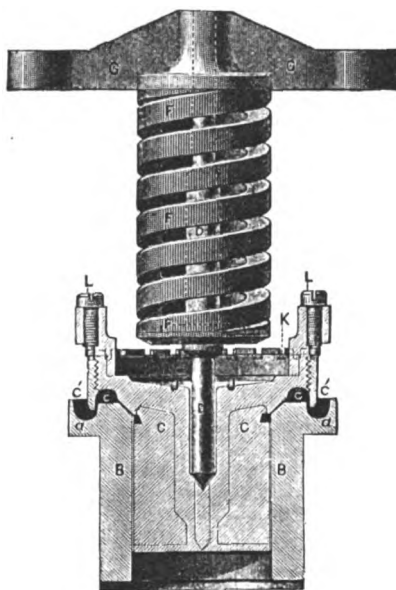


Fig. 513.

Encased.

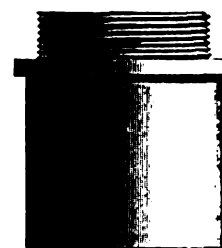


Fig. 514.

## PORTABLE ENGINE VALVE.

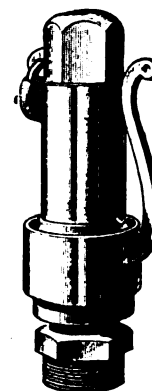


Fig. 516.

## Prices, Nickel Seated Safety Valves, Fig. 512.

Made with either Flanged or Screwed Base Connection. In ordering, state size of boiler and highest working pressure.

Size, inches.....	1	1½	2	2½	3	3½	4	4½	5	5½	6
Price.....	each, \$15.00	20.00	30.00	40.00	55.00	75.00	87.00	100.00	125.00	150.00	175.00

## Prices, Locomotive Safety Valves, Fig. 513.

In ordering, state outside diameter of bush to press into dome cap.

2½ inch Valve, including bush, spring, spindle and cross bar.....	each,	\$20.00
2½ inch Valve, including bush, spring, spindle and cross bar.....	each,	25.00

## Prices, Locomotive Safety Valves, Encased, Fig. 514.

In ordering, state pressure valve shall be set at.

2½ inch Valve, complete, with lock-up attachment and bush to press into dome cap.....	each,	\$25.00
2½ inch Valve, complete, with lock-up attachment and bush to press into dome cap.....	each,	35.00
3 inch Valve, complete, with lock-up attachment and bush to press into dome cap.....	each,	50.00

## Prices, Cylinder Relief Valves, Fig. 515.

1 Valve for Locomotive.....	\$20.00	2 Valves for one Locomotive.....	\$35.00
-----------------------------	---------	----------------------------------	---------

## Prices, Portable Engine Valves, Fig. 516.

In ordering, state horse power or size of boiler and highest working pressure.

Size, inches.....	1	1½	2	2½
Price, without locks.....	each, \$8.00	10.00	15.00	20.00
		30.00	40.00	

## ELEVATOR AND GOVERNOR VALVES.

## QUICK OPENING ELEVATOR REGULATING VALVE.

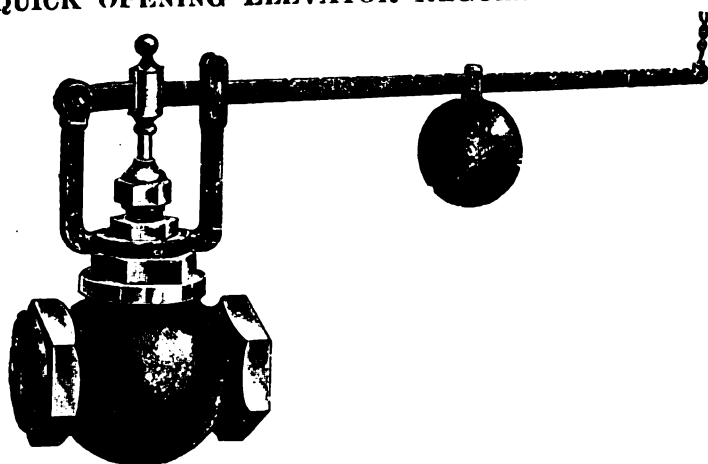


Fig. 517.

This is the most reliable valve made for the automatic and positive control of the speed of all pumps and engines which are used for tank service in connection with elevators, or for pumping water into reservoirs for general use. The valve is made with yoke, lever and weight as shown in above cut or without these additions, the spindle being in the latter case left plain on the upper end.

Sizes, inches.....	1	1½	1½	2	2½	3	4
All Brass Valves.....	each, \$5.00	6.50	8.50	13.00	21.00	32.00	50.00
I. B. B. M. ".....							

## REGISTER GOVERNOR VALVE.

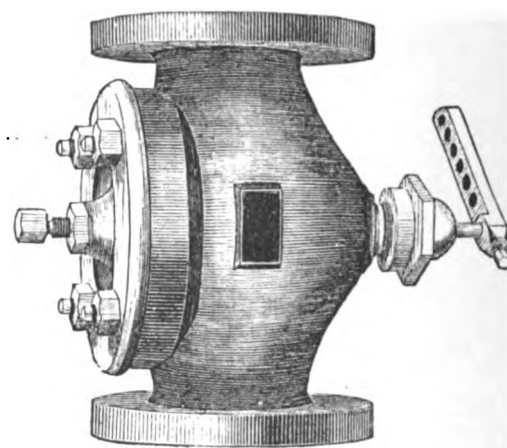


Fig. 518.

This valve is used extensively in saw mills as a Sawyer's Valve; in Mines, and as a Relief Valve, for hoisting engines, etc.

It is not intended to take the place of a tight stop valve. Made in the most substantial manner and balanced so that it works with perfect ease.

Sizes, inches.....	1½	2	2½	3	3½	4	5
Diameter Flange, inches.....	5½	6	7	8	9	10	11
Length, inches.....	7	8½	9½	12	13	14	16
Price.....	each, \$10.00	12.00	15.00	20.00	24.00	30.00	40.00

## FITTINGS FOR ANHYDROUS AND AQUA AMMONIA.

## ELBOW.



Fig. 519.

## TEE.



Fig. 520.

## REDUCING TEE.



Fig. 521.

## CROSS.



Fig. 522.

## COUPLING.



Fig. 523.

## RETURN BEND.



Fig. 524.

## RETURN BEND, Open Pattern.



Fig. 525.

## AUTOMATIC AMMONIA GAUGE.

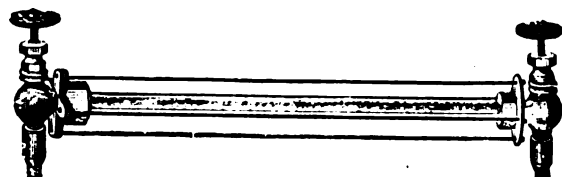


Fig. 526.

## HEADER.



Fig. 527.

## SMALL VALVE.

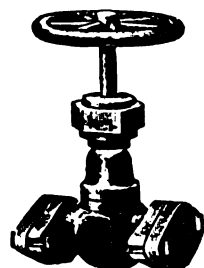


Fig. 528.

## CHECK VALVE.



Fig. 530.

These Valves and Fittings are especially designed for and adapted to Ammonia Machinery as used in ice-making and refrigerating purposes.

They are constructed entirely of iron and particular care is used in the selection of the material. The composition used is both tenacious and, at the same time close in grain and texture, preventing the escape of gas through the pores of the metal.

Such parts of the valves as are subjected to unusual strain are made of wrought iron, and the metal in the remainder is moulded in such a manner as to reduce to a minimum the danger of sand holes and flaws. Particular care has been paid to the stuffing boxes, which are made of large size.

Each is provided with a chamber for holding glycerine, which is poured through an opening made for this purpose. By this means the packing is kept moist and impervious to the gas, so that it is unnecessary to screw the packing down hard.

## AMMONIA STRAINER.



Fig. 529.

## LARGE VALVE.

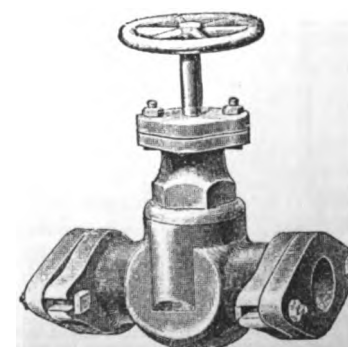


Fig. 531.

## Prices, Elbows.

Sizes, inches.....	½	¾	1
Each.....	\$1.40	1.60	1.90

## Prices, Reducing Tees.

Sizes, inches.....	1 x ½	2 x ½ x ½
Each.....	\$1.60	1.25

## Prices, Couplings.

Sizes, inches.....	½	¾	1	1½	2
Each.....	\$0.70	1.00	1.30	1.70	2.00

## Price, Return Bends, Open Pattern.

4 in. between centers for 1 in. Pipe.....	each, \$0.30
---	--------------

## Prices, Headers.

10 Pipes.....	each, \$16.00
5 Pipes.....	each, \$10.00

## Prices, Globe and Check Valves.

Sizes, inches.....	½	¾	1	1½	2	2½
Globe Valves.....	each, \$4.00	5.00	7.00	8.50	10.00	12.00
Check ".....	2.75	3.50	5.00	6.00	7.50	8.00

## Prices, Tees.

Sizes, inches.....	½	¾	1	1½
Each.....	\$1.80	2.00	2.40	3.00

## Prices, Crosses.

Sizes, inches.....	¾ x ½	1 x ½
Each.....	\$3.20	3.80

## Prices, Return Bends.

Sizes, inches.....	¾	1	1½
Each.....	\$1.80	2.10	6.00

## Price, Automatic Ammonia Gauges.

Complete, including glass.....	each, \$12.00
--------------------------------	---------------

## Price, Strainers.

Ammonia Strainers.....	each, \$10.00
------------------------	---------------

SCREWED VALVE,  
With Bolted Top.



Fig. 532.

FLANGED VALVE.  
For Steam and Water.

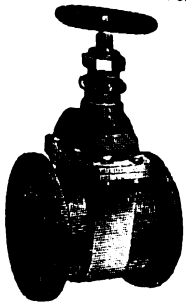


Fig. 533.

SCREWED VALVE,  
With Quick Moving Slide  
Stem and Lever.

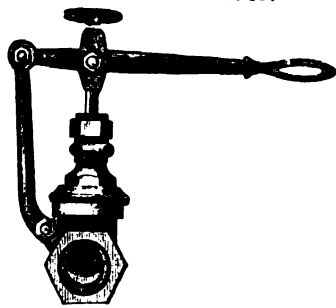


Fig. 539.

# THE "HAYDENVILLE." DOUBLE GATE VALVES.

SCREWED VALVE,  
With Screwed Top.

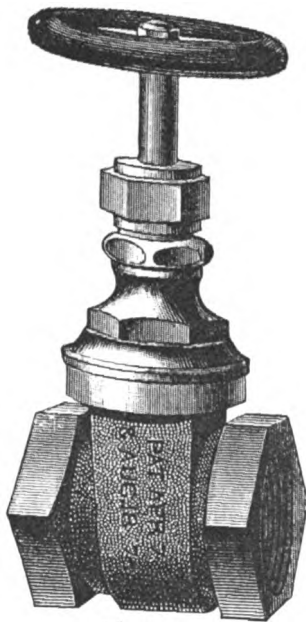


Fig. 534.

## ENLARGED CUT

Showing construction of  
Gates used in Haydenville  
Valves.

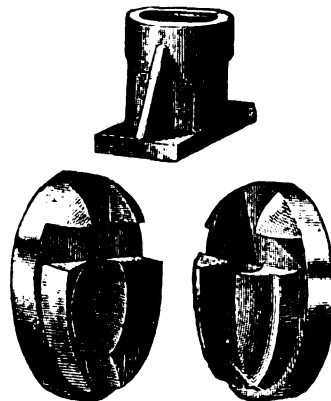


Fig. 535.

SCREWED VALVE,  
Sectional Cut.

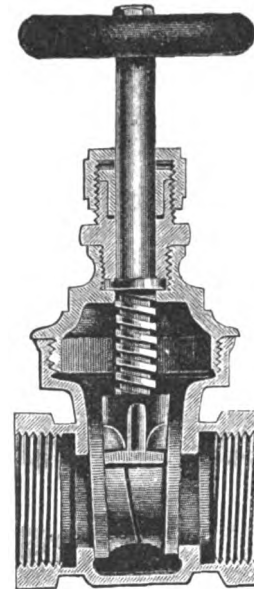


Fig. 536.

VALVE WITH HUB  
ENDS, for Gas.



Fig. 537.

VALVE WITH HUB  
ENDS, for Water.

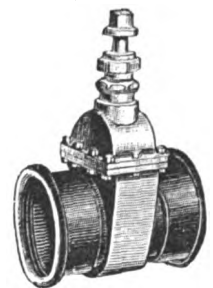


Fig. 538.

Sizes, Inches.	STEAM METAL.			IRON BODY, BRASS MOUNTED.					ALL IRON.		
	Screw Ends.	Flanged Ends.	Extra for Sliding Stem and Lever.	Screw Ends.	Flanged Ends.	Screwed Bolted Top.	Flanged for Steam and Water.	Hub or Spigot for Water.	Hub or Spigot for Gas.	Without Cap and Chain.	With Cap and Chain.
1/2	\$1.30	2.50	1.00	2.60							
3/4	1.75	3.00	1.20	3.00							
1	2.25	4.00	1.40	3.50	2.80					2 25	3.50
1 1/4	3.25	5.00	1.60	4.00	3.25					3.25	4.60
1 1/2	4.25	7.50	1.80	5.00	4.00					4.25	5.75
2	6.25	10.00	2.00	7.00	4.50			10.00	8.00	6.25	8.00
2 1/2	11.50	16.00	2.25	10.00	5.50	10.00	10.00			11.50	13.75
3	16.00	20.00	2.50	12.00	7.00	13.00	13.00	15.00	10 00	16.00	19.50
3 1/2	32.00	40.00	2.75	16.00	10 00	16.50	17.00				
4	40.00	48.00	3.00	18.00	12.00	19.00	18.50	19.00	14.50		
5	52.00	64.00	4.00		16.00	25.00	24.00	25.00	20.00		
6	78.00	90.00	5.00		18.00	32.00	31.00	30.50	24.00		
8						48.00	45.00	45.00	34.00		
10						68.00	64.00	62.00	47.00		
12							86.00	82.00	62.00		

SCREW ENDS.

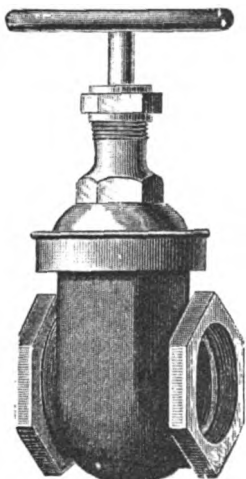


Fig. 540.

## KENNEDY'S IMPROVED DOUBLE GATE VALVES.

To Bear Heavy Pressure Either Side of Gate.

### STEAM AND WATER VALVES, STEAM METAL.

Size of Opening.	Diameter of Standard Flanges.	Face to Face Screwed.	Face to Face Flanged.	Screwed Ends. Each.	Flanged Ends. Each.	Extra for Lever Valves.
1/2 inch.	3 inches.	2 1/4 inches.		\$1.20	2.75	1.00
3/4 "	3 "	2 5/8 "	3 inches.	1.75	3.50	1.00
1 "	4 "	3 "	3 "	2.50	4 50	1.50
1 1/4 "	4 1/2 "	3 1/4 "	3 1/2 "	3.50	5.50	1.60
1 1/2 "	5 "	3 3/4 "	4 "	5.00	7.50	2.00
2 "	6 "	4 1/4 "	4 3/4 "	7.50	12.00	2.50
2 1/2 "	7 "	4 3/4 "	5 1/2 "	14.00	18.00	3.00
3 "	7 1/2 "	5 1/8 "	6 "	20.00	25.00	3.50
3 1/2 "	8 1/2 "	5 3/4 "	6 1/2 "	32 00	40.00	4.00
4 "	9 "	6 "	7 "	40.00	48.00	4.50

### STEAM, WATER, GAS, OIL AND AMMONIA VALVES.

IRON BODY, BRASS MOUNTED, BOLTED TOP.  
For Steam and Water.

Size of Opening.	Diameter of Standard Flanges.	Face to Face Flanged.	Face to Face Screwed.	Screwed Ends, each.	Flanged Ends, Each.	Sliding Stem and Lever Extra.
2 inches.	6 1/2 ins.	5 7/8 ins.	5 1/2 ins.	\$8.50	9.00	2.50
2 1/2 "	7 "	6 1/8 "	5 3/4 "	12.00	12.50	2.75
3 "	8 "	7 1/8 "	6 3/8 "	15.00	15.50	3.00
3 1/2 "	8 1/2 "	7 3/4 "	6 3/4 "	18.00	19.00	3.50
4 "	9 "	8 "	7 1/2 "	20.00	21.00	4.00
5 "	10 "	9 1/8 "	8 "	25.00	27.00	
6 "	11 "	9 3/4 "	8 3/4 "	30.00	32.00	
7 "	12 "	10 1/2 "	9 1/2 "	40.00	40.00	
8 "	13 "	11 "	10 1/4 "	50.00	50.00	
10 "	16 "	12 "		65.00	65.00	
12 "	18 "	13 "		90.00	90.00	

ALL IRON, BOLTED TOP.  
For Gas, Oil and Ammonia.

Size of Opening.	Diameter of Standard Flanges.	Face to Face Flanged.	Face to Face Screwed.	Screwed Ends, each.	Flanged Ends, Each.	Sliding Stem and Lever Extra.
2 inches.	6 1/2 ins.	5 7/8 ins.	5 1/2 ins.	\$7.65	2.50	
2 1/2 "	7 "	6 1/8 "	5 3/4 "	10.80	2.75	
3 "	8 "	7 1/8 "	6 3/8 "	13.50	3.00	
3 1/2 "	8 1/2 "	7 3/4 "	6 3/4 "	16.20	3.50	
4 "	9 "	8 "	7 1/2 "	18.00	4.00	
5 "	10 "	9 1/8 "	8 "	22.50	5.00	
6 "	11 "	9 3/4 "	8 3/4 "	27.00	6.00	
7 "	12 "	10 1/2 "	9 1/2 "	36.00		
8 "	13 "	11 "	10 1/4 "	45.00		
10 "	16 "	12 "		58.00		
12 "	18 "	13 "		80.00		

I. B. B. M. BOLTED TOP.  
For Street Mains.

Size of Opening.	Diameter of Standard Flanges.	Face to Face Flanged.	Face to Face Screwed.	Screwed Ends, each.	Flanged Ends, Each.	Sliding Stem and Lever Extra.
2 inches.	6 1/2 ins.	5 7/8 ins.	5 1/2 ins.	\$15.00	3 1/2 ins.	
2 1/2 "	7 "	6 1/8 "	5 3/4 "	20.00	4 1/2 "	
3 "	8 "	7 1/8 "	6 3/8 "	25.00	5 "	
3 1/2 "	8 1/2 "	7 3/4 "	6 3/4 "	30.00	5 1/2 "	
4 "	9 "	8 "	7 1/2 "	40.00	6 "	
5 "	10 "	9 1/8 "	8 "	50.00	6 1/2 "	
6 "	11 "	9 3/4 "	8 3/4 "	65.00		
7 "	12 "	10 1/2 "	9 1/2 "	90.00		
8 "	13 "	11 "	10 1/4 "			
10 "	16 "	12 "				
12 "	18 "	13 "				

SCREW ENDS,  
BOLTED TOP.

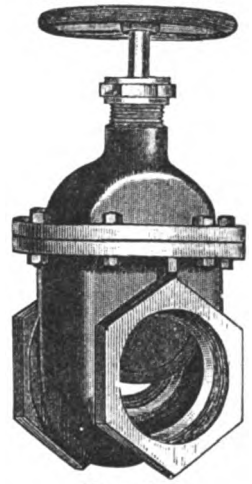


Fig. 541.



## CHAPMAN DIRECT PASSAGE GATE VALVES.

For Water, Gas, Steam, Oil, Ammonia, Acid, Etc.

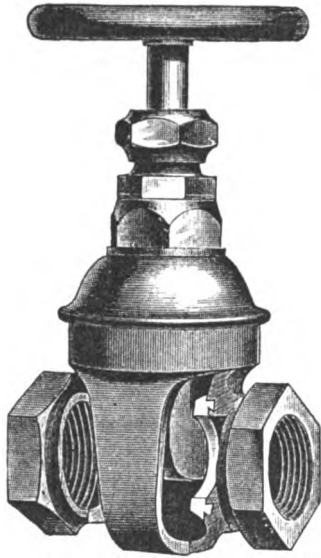
COMPOSITION SCREW TOP,  
STEAM & WATER VALVE,  
Screw Ends.

Fig. 542.

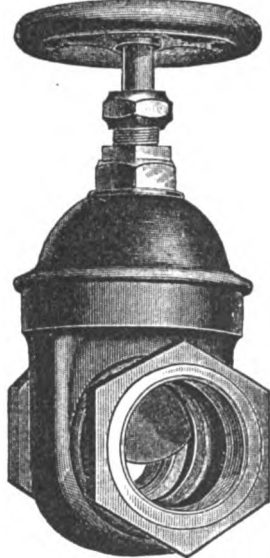
IRON BODY, SCREW TOP,  
STEAM & WATER VALVE,  
Screw Ends.

Fig. 543.

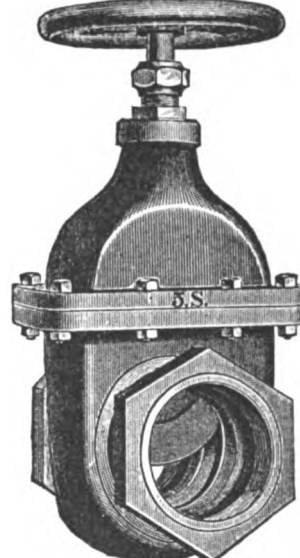
IRON BODY, BOLTED TOP,  
STEAM & WATER VALVE,  
Screw Ends.

Fig. 544.

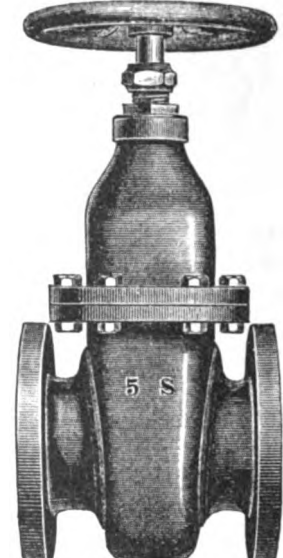
IRON BODY BOLTED TOP,  
STEAM & WATER VALVE,  
Flange Ends.

Fig. 545.

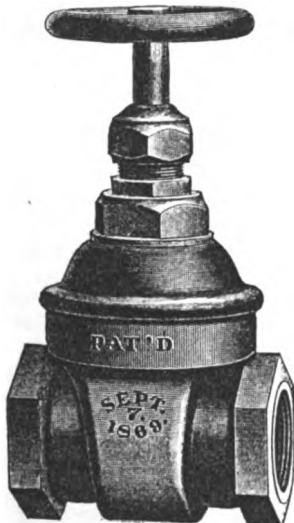
ALL IRON, SCREW TOP,  
GAS, OIL AND AMMONIA VALVE,  
Screw Ends.

Fig. 546.

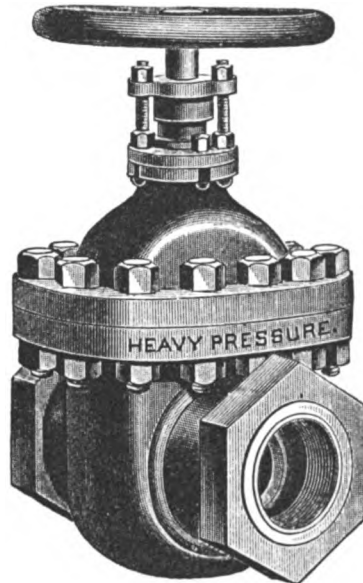
IRON BODY, HEAVY PRESSURE VALVE,  
BOLTED TOP,  
Screw Ends.

Fig. 547.

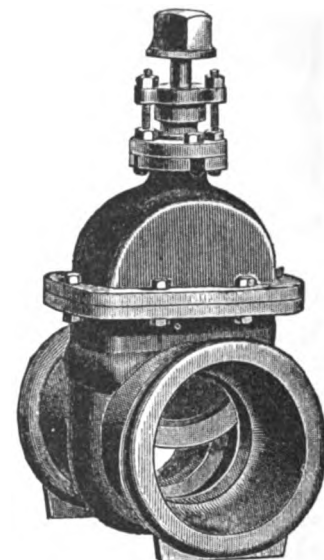
IRON BODY, BOLTED TOP,  
WATER GATE FOR STREET MAIN,  
Bell Ends.

Fig. 548.

## COMPOSITION.

Diam. of Opening. Inches.	STEAM AND WATER VALVES.		
	Screwed Top, Screwed Ends.	Screwed Top, Flange Ends.	Sliding Stem and Lever Extra.
Fig. 542.			
1/4	\$ 1.20	2.25	0.75
3/8	1.20	2.25	.75
1/2	1.30	2.50	1.00
3/4	1.75	3.00	1.20
1	2.25	4.00	1.40
1 1/4	3.25	5.00	1.60
1 1/2	4.25	7.50	1.80
2	6.25	10.00	2.00
2 1/2	11.50	16.00	2.25
3	16.00	20.00	2.50
3 1/2	30.00	30.00	2.75
4	38.00	40.00	3.00
4 1/2			
5			
6			
7			
8			
10			
12			

## IRON BODY, COMPOSITION MOUNTINGS.

STEAM AND WATER VALVES.				HEAVY PRESSURE VALVES.		GATES FOR STREET MAINS.		
Screwed Top, Screwed Ends.	Screwed Top, Flange Ends.	Bolted Top, Screwed Ends.	Bolted Top, Flange Ends.	Sliding Stem and Lever Extra	Bolted Top, Screwed Ends.	Bolted Top, Flange Ends.	Bolted Top, Ball or Spigot Water Gates.	Bolted Top, Ball or Gas Gates.
Fig. 513.		Fig. 544. Fig. 545.		Fig. 517.				
2.60	2.80			1.00				
3.00	3.25			1.20				
3.50	4.00			1.40				
4.00	4.50			1.60				
5.00	5.50			1.80				
7.00	7.00			2.00				
10.00	10.00	10.00	10.00	2.25	17.50	18.50	10.00	8.00
12.00	12.00	13.00	13.00	2.50	16.25	17.50		
16.00	16.00	16.50	17.00	2.75	29.50	32.00	15.00	10.00
18.00	18.00	19.00	18.50	3.00	60.00	63.50		
		23.00	22.00				19.00	14.50
		25.00	21.00					
		32.00	31.00				25.00	20.00
		38.00	37.00			150.00	30.50	21.00
		48.00					36.00	
			45.00				45.00	34.00
			61.00				62.00	47.00
			86.00				82.00	62.00

Larger Sizes Steam, Water and Pressure Valves to order. Prices on application.

## ALL IRON.

GAS, OIL AND AMMONIA VALVES.			
Screwed Top, Screwed Ends.	Screwed Top, Flange Ends.	Bolted Top, Screwed Ends.	Bolted Top, Flange Ends.
Fig. 546.			
2.50	2.70		
3.00	3.25		
3.50	4.00		
4.25	4.75		
5.00	5.50		
7.00	7.00		
10.00	10.00		
		12.00	12.00
		15.25	15.25
		17.00	17.00



**SCREWED VALVE.**  
Brass.  
1 1/4 inch to 2 1/2.

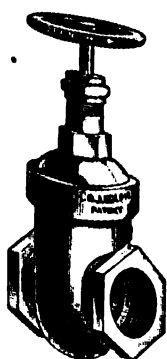


Fig. 549.

**SCREWED VALVE.**  
Brass or Iron.  
2 1/2 in. and upward.

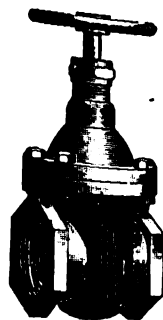


Fig. 550.

**LUDLOW SLIDING STOP VALVES.**  
For Water, Gas, Steam and Oil.

**EXTREME PRESSURE VALVE.**  
Tested at 2000 lb. to sq. in. and upwards.

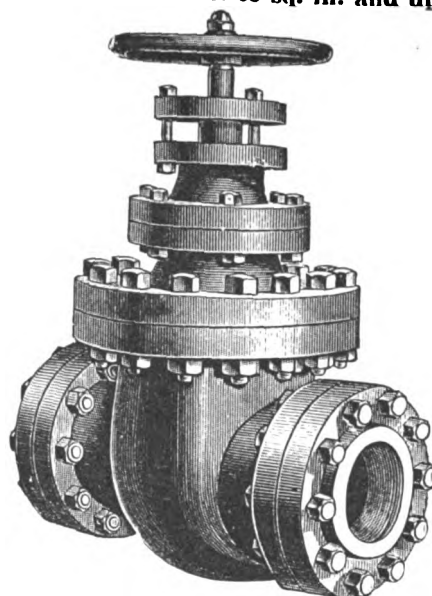


Fig. 551.

**QUICK MOVING SLIDE.**  
Stem and Lever Valve.

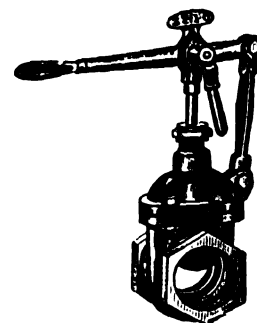


Fig. 552.

**FLANGED VALVE.**

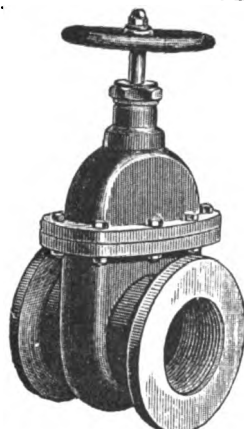


Fig. 553.

**LARGE VALVE, WITH BEVELED GEARING.**  
To Lie on Side, or can be arranged to Stand.

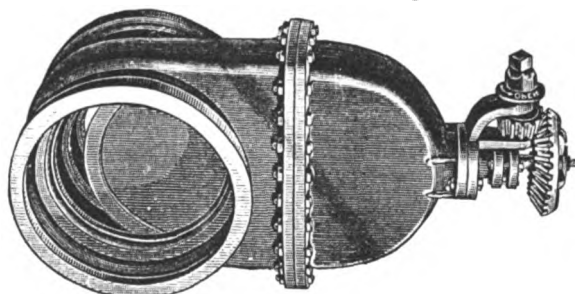


Fig. 554.

**HUB VALVE.**

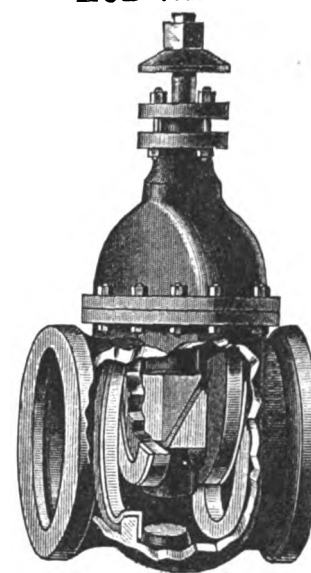


Fig. 555.

**IRON VALVES.**

MEASUREMENTS.  
BRASS MOUNTED OR ALL IRON.

Sizes.	Diam. of Standard Flange.	Face to Face of Flanges.	Face to Face of S'w S'ck't	End to End of Hubs.	Depth of Hub.
Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
1 1/2	5 1/2	5 1/2	4	7	2 1/4
2	6 1/2	6 1/2	5 3/4	7	2 1/4
2 1/2	7	7	6 3/4	7 1/2	2 1/2
3	8	8	7 3/4	8 1/2	2 3/4
3 1/2	8 1/2	8 1/2	8 1/4	9 3/4	2 3/4
4	9	9	9 1/4	10 3/4	3
5	10	10 3/4	11	12	3 1/2
6	11	11 3/4	11 1/4	12 1/2	3 3/4
7	12	12 3/4	12 1/4	13 3/4	4
8	13	13 3/4	13 1/4	14 3/4	4
10	16	16 3/4	16 1/4	17 3/4	4
12	18	18 3/4	18 1/4	20 3/4	4

**SINGLE GATE.**

ALL IRON.

BRASS MOUNTED.

Screw Ends.	Flange Ends.	Hub or Spigot.	Screw Ends.	Flange Ends.	Hub or Spigot.
Each.	Each.	Each.	Each.	Each.	Each.
\$5.50	5.75	6.00	5.50	5.75	6.00
6.25	6.50	6.75	6.25	6.50	6.75
7.00	7.25	7.50	7.00	7.25	7.50
7.75	8.00	8.25	7.75	8.00	8.25
8.50	8.75	9.00	8.50	8.75	9.00
9.25	9.50	9.75	9.25	9.50	9.75
10.00	10.25	10.50	10.00	10.25	10.50
10.75	11.00	11.25	10.75	11.00	11.25
11.50	11.75	12.00	11.50	11.75	12.00
12.25	12.50	12.75	12.25	12.50	12.75
13.00	13.25	13.50	13.00	13.25	13.50
13.75	14.00	14.25	13.75	14.00	14.25
14.50	14.75	15.00	14.50	14.75	15.00
15.25	15.50	15.75	15.25	15.50	15.75
16.00	16.25	16.50	16.00	16.25	16.50
16.75	17.00	17.25	16.75	17.00	17.25
17.50	17.75	18.00	17.50	17.75	18.00
18.25	18.50	18.75	18.25	18.50	18.75
19.00	19.25	19.50	19.00	19.25	19.50
19.75	20.00	20.25	19.75	20.00	20.25
20.50	20.75	21.00	20.50	20.75	21.00
21.25	21.50	21.75	21.25	21.50	21.75
22.00	22.25	22.50	22.00	22.25	22.50
22.75	23.00	23.25	22.75	23.00	23.25
23.50	23.75	24.00	23.50	23.75	24.00
24.25	24.50	24.75	24.25	24.50	24.75
25.00	25.25	25.50	25.00	25.25	25.50
25.75	26.00	26.25	25.75	26.00	26.25
26.50	26.75	27.00	26.50	26.75	27.00
27.25	27.50	27.75	27.25	27.50	27.75
28.00	28.25	28.50	28.00	28.25	28.50
28.75	29.00	29.25	28.75	29.00	29.25
29.50	29.75	30.00	29.50	29.75	30.00
30.25	30.50	30.75	30.25	30.50	30.75
31.00	31.25	31.50	31.00	31.25	31.50
31.75	32.00	32.25	31.75	32.00	32.25
32.50	32.75	33.00	32.50	32.75	33.00
33.25	33.50	33.75	33.25	33.50	33.75
34.00	34.25	34.50	34.00	34.25	34.50
34.75	35.00	35.25	34.75	35.00	35.25
35.50	35.75	36.00	35.50	35.75	36.00
36.25	36.50	36.75	36.25	36.50	36.75
37.00	37.25	37.50	37.00	37.25	37.50
37.75	38.00	38.25	37.75	38.00	38.25
38.50	38.75	39.00	38.50	38.75	39.00
39.25	39.50	39.75	39.25	39.50	39.75
40.00	40.25	40.50	40.00	40.25	40.50
40.75	41.00	41.25	40.75	41.00	41.25
41.50	41.75	42.00	41.50	41.75	42.00
42.25	42.50	42.75	42.25	42.50	42.75
43.00	43.25	43.50	43.00	43.25	43.50
43.75	44.00	44.25	43.75	44.00	44.25
44.50	44.75	45.00	44.50	44.75	45.00
45.25	45.50	45.75	45.25	45.50	45.75
46.00	46.25	46.50	46.00	46.25	46.50
46.75	47.00	47.25	46.75	47.00	47.25
47.50	47.75	48.00	47.50	47.75	48.00
48.25	48.50	48.75	48.25	48.50	48.75
49.00	49.25	49.50	49.00	49.25	49.50
49.75	50.00	50.25	49.75	50.00	50.25
50.50	50.75	51.00	50.50	50.75	51.00
51.25	51.50	51.75	51.25	51.50	51.75
52.00	52.25	52.50	52.00	52.25	52.50
52.75	53.00	53.25	52.75	53.00	53.25
53.50	53.75	54.00	53.50	53.75	54.00
54.25	54.50	54.75	54.25	54.50	54.75
55.00	55.25	55.50	55.00	55.25	55.50
55.75	56.00	56.25	55.75	56.00	56.25
56.50	56.75	57.00	56.50	56.75	57.00
57.25	57.50	57.75	57.25	57.50	57.75
58.00	58.25	58.50	58.00	58.25	58.50
58.75	59.00	59.25	58.75	59.00	59.25
59.50	59.75	60.00	59.50	59.75	60.00
60.25	60.50	60.75	60.25	60.50	60.75
61.00	61.25	61.50	61.00	61.25	61.50
61.75	62.00	62.25	61.75	62.00	62.25
62.50	62.75	63.00	62.50	62.75	63.00
63.25	63.50	63.75	63.25	63.50	63.75
64.00	64.25	64.50	64.00	64.25	64.50
64.75	65.00	65.25	64.75	65.00	65.25
65.50	65.75	66.00	65.50	65.75	66.00
66.25	66.50	66.75	66.25	66.50	66.75
67.00	67.25	67.50	67.00	67.25	67.50
67.75	68.00	68.25	67.75	68.00	68.25
68.50	68.75	69.00	68.50	68.75	69.00
69.25	69.50	69.75	69.25	69.50	69.75
70.00	70.25	70.50	70.00	70.25	70.50
70.75	71.00	71.25	70.75	71.00	71.25
71.50	71.75	72.00	71.50	71.75	72.00
72.25	72.50	72.75	72.25	72.50	72.75
73.00	73.25	73.50	73.00	73.25	73.50
73.75	74.00	74.25	73.75	74.00	74.25
74.50	74.75	75.00	74.50	74.75	75.00
75.25	75.50	75.75	75.25	75.50	75.75
76.00	76.25	76.50	76.00	76.25	76.50
76.75	77.00	77.25	76.75	77.00	77.25
77.50	77.75	78.00	77.50	77.75	78.00
78.25	78.50	78.75	78.25	78.50	78.75
79.00	79.25	79.50	79.00	79.25	79.50
79.75	80.00	80.25	79.75	80.00	80.25
80.50	80.75	81.00	80.50	80.75	81.00
81.25	81.50	81.75	81.25	81.50	81.75
82.00	82.25	82.50	82.00	82.25	82.50
82.75	83.00	83.25	82.75	83.00	83.25
83.50	83.75	84.00	83.50	83.75	84.00
84.25	84.50	84.75	84.25	84.50	84.75
85.00	85.25	85.50	85.00	85.25	85.50
85.75	86.00	86.25	85.75	86.00	86.25
86.50	86.75	87.00	86.50	86.75	87.00
87.25	87.50	87.75	87.25	87.50	87.75
88.00	88.25	88.50	88.00	88.25	88.50
88.75	89.00	89.25	88.75	89.00	89.25
89.50	89.75	90.00	89.50	89.75	90.00
90.25	90.50	90.75	90.25	90.50	90.75
91.00	91.25	91.50	91.00	91.25	91.50
91.75	92.00	92.25	91.75	92.00	92.25
92.50	92.75	93.00	92.50	92.75	93.00
93.25	93.50	93.75	93.25	93.50	93.75
94.00	94.25	94.50	94.00	94.25	94.50
94.75	95.00	95.25	94.75	95.00	95.25
95.50	95.75	96.00	95.50	95.75	96.00
96.25	96.50	96.75	96.25	96.50	96.75
97.00	97.25	97.50	97.00	97.25	97.50
97.75	98.00	98.25	97.75	98.00	98.25
98.50	98.75	99.00	98.50	98.75	99.00
99.25	99.50	99.75	99.25	99.50	99.75
100.00	100.25	100.50	100.00	100.25	100.50

**DOUBLE GATE.**

To bear heavy pressure either Side of Gate.

ALL IRON.

BRASS MOUNTED.

Screw Ends.	Flange Ends.	Hub or Spigot.	Screw Ends.	Flange Ends.	Hub or Spigot.	Extra for Slide stem and Lever.
Each.	Each.	Each.	Each.	Each.	Each.	Each.
6.00	6.25		6.00	6.25		1.00
7.00	7.25	7.00	7.00	7.25	7.25	1.00
9.25	9.50	8.75	10.50	10.75	10.75	1.25
10.75	11.25	10.25	13.00	13.50	14.50	1.25
14.25	14.75	13.75	16.50	17.00	16.00	1.25
15.50	16.00	15.00	18.00	18.50	17.50	1.25
23.00	22.50	22.00	25.00	24.50	24.00	1.25
25.50	25.00	24.50	31.00	30.00	28.00	1.25
35.00	34.00	33.00	38.00	37.00	36.00	1.25
37.50	36.00	35.00	45.00	43.50	42.00	1.25
	49.00	48.00		60.00	58.00	4.00
	64.00	62.00		78.00	76.00	4.50

## IMPROVED HYDRANTS.

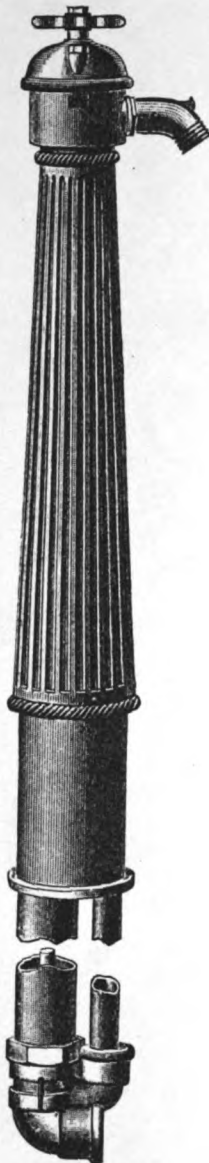
YARD  
HYDRANT,

Fig. 556.

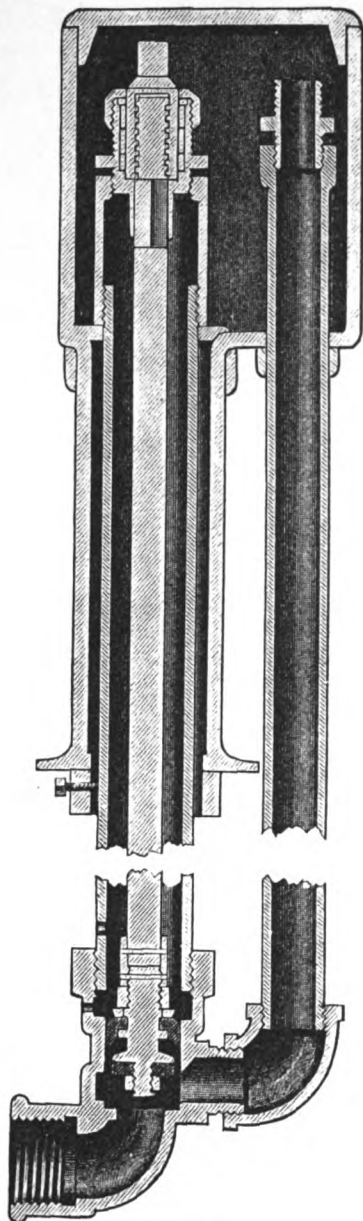
WASH HYDRANT,  
Sectional Cut.

Fig. 557.

FIRE HYDRANTS.

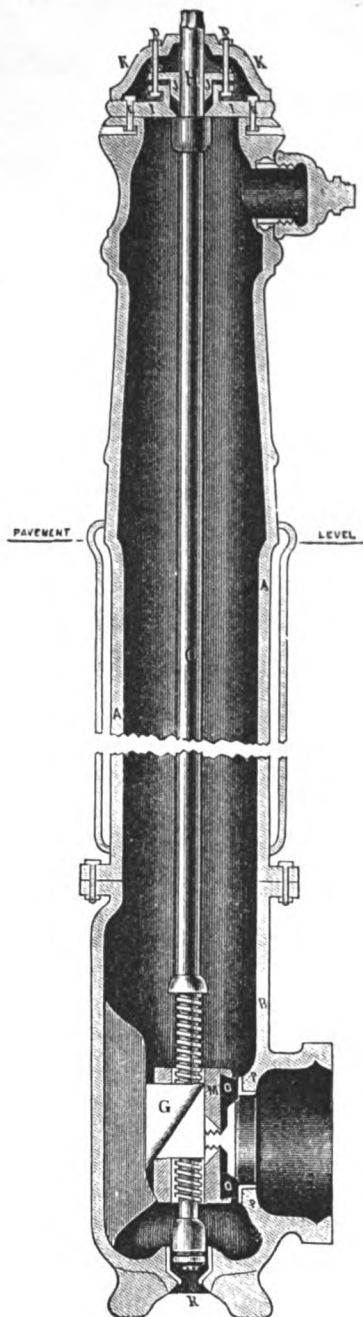


Fig. 558.

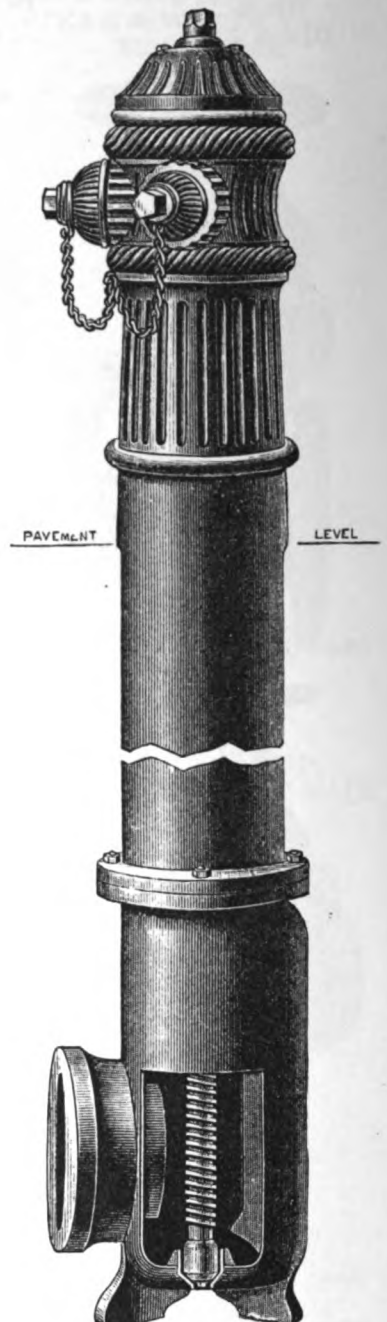


Fig. 559.

## Prices, Yard and Wash Hydrants.

Diameter of Pipe Connections, inches.....	1 1/2	3 1/4	1	2
Yard Hydrants, Fig. 556.....each,	\$9.50	11.50	11.75	20.00
Street Wash Hydrants, Fig. 557....."	8.00	10.75	11.00	

Above prices are for standard length—from surface to bottom, 5 feet.

## Prices, Rubber-Faced Slide Gate Fire Hydrants. Figs. 558 and 559.

Diameter Pipe Connections	Diameter Stand Pipe.	Diameter Seat Ring.	With One 2 1/2 Nozzle.	With Two 2 1/2 Nozzles.	With Three 2 1/2 Nozzles.	With Four 2 1/2 Nozzles.	With Six 2 1/2 Nozzles.	With One Steamer Nozzle.	With One Steamer and One 2 1/2 Nozzle.	With One Steamer and Two 2 1/2 Nozzles.	Frost Case, Standard Length.	For each 6 inches more or less than standard length of Stand Pipe, add or deduct from List.	For each 6 inches more or less than standard length of Frost Case, add or deduct from List.	Extra Charge for Hub.	Independ- ent Nozzle. Gates.
Inches.	Inches.	Inches.	Each.	Each.	Each.	Each.	Each.	Each.	Each.	Each.	Each.			Each.	Each.
3 or 4	4 5/8	3	\$28.00								4.50	0.60	0.44		
3, 4 or 6	5 3/4	4	31.00	33.00	35.00			33.00	35.00	37.00	5.00	.75	.50	6 in. 0.50	3.50
4 or 6	7	5		38.50	40.50			38.50	40.50	42.50	6.50	.85	.70	No charge	3.75
6 or 8	8	6		49.00	51.00	53.00		49.00	51.00	53.00	7.50	1.00	.90	8 in. 1.25	3.75
8 or 10	10	8													4.50

The above prices are based on standard length, viz., five feet from ground surface to bottom of connecting pipe. Frost Cases are furnished if wanted, though experience has shown that with the Rubber Gate they are not needed to prevent freezing.

Secondary Gates made if desired, but think a Valve in the lateral pipe far preferable—saving complication in Hydrant.

## Prices, Siamese Couplings.

1, 2 1/2 inch male and 2, 2 1/2 inch female loose couplings.....\$10.50

2, 2 1/2 inch male and 1, 2 1/2 inch female loose couplings.....\$8.50

Prices on Balanced Float Valves, and Standards and Indicators, given on application.

**STEAM COCK.**  
Square Head, Screwed.

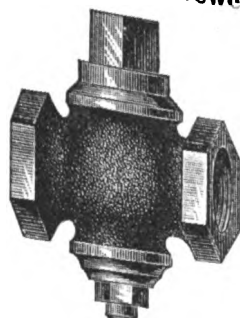


Fig. 560.

**STEAM COCK.**  
Flat Head, Screwed.

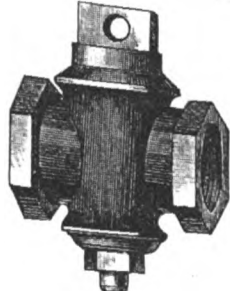


Fig. 561.

**STEAM COCK.**  
Square Head, Flanged.

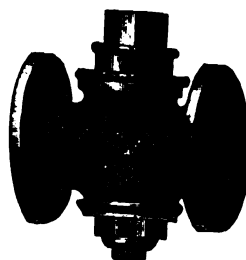


Fig. 562.

**THREE WAY STEAM COCK.**  
Flat Head, Screwed.

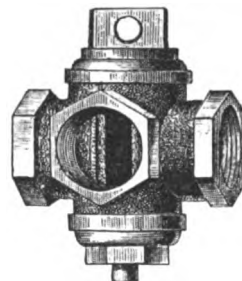


Fig. 563.

**METER COCK WITH UNION.**  
Square Head.

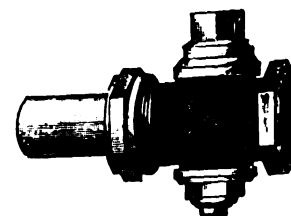


Fig. 564.

Sizes, inches	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6
Steam Cocks, Steam Metal, Square or Flat Head, Screwed.....	each, \$0.70	.75	1.10	1.50	2.25	3.75	4.80	7.25	11.00	20.00	36.00	50.00			
" " " Square Head, Flanged.....			3.50	4.50	5.50	8.00	10.00	15.00	22.00	32.00	53.00	75.00		120.00	170.00
" " " Three Way Flat Head, Screwed.....			1.65	2.25	3.40	5.50	7.00	10.00	18.00	26.00	45.00	65.00			
" " " Square Head, Flanged.....			5.25	6.50	7.75	10.00	14.00	22.00	31.00	39.00	70.00	100.00			
Service Cocks, Brass, Square or Flat Head.....		.55	.65	.75	1.00	1.40	2.20	3.00	5.00	10.00	15.00				
Meter Cocks, " " " with Union, Brass, Square or Flat Head.....		.60	.70	.85	1.20	1.70	2.60	3.60	5.75						
Steam Cocks, all Iron, Square or Flat Head, Screwed.....		.75	.90	1.00	1.30	2.00	3.00	4.25	6.75						
" " " Flanged.....		.70	.75	.80	.90	1.25	1.50	2.00	2.60	4.50	6.50	12.00	16.00	28.00	45.00
" " " Three Way, Square or Flat Head, Screwed.....				1.65	2.25	2.75	3.50	4.35	6.50	9.50	15.50	20.00	32.00	37.00	50.00
" " " Flanged.....				1.30	1.75	2.00	2.75	4.00	6.00	8.50	15.00	20.00		40.00	55.00
" " " Iron, with Brass Plugs, Square or Flat Head, Screwed.....	1.00	1.10	1.20	1.60	2.00	2.75	4.00	5.00	9.50	13.50	30.00	40.00		46.00	61.00
" " " Flanged.....				2.35	3.00	4.00	5.50	6.75	11.50	16.50	33.50	44.00			
" " " Three Way, Square or Flat Head, Screwed.....				2.00	2.50	3.25	4.75	6.50	11.00	15.50	33.00	44.00			
" " " Flanged.....				3.00	4.00	5.00	7.00	9.00	14.00	20.00	38.25	50.00			

### ASBESTOS PACKED BRASS AND IRON COCKS.

**STEAM COCK.**  
Screwed.

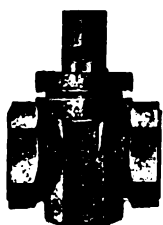


Fig. 565.

**STEAM COCK.**  
With Waste.



Fig. 565a.

**STEAM COCK.**  
Flanged.

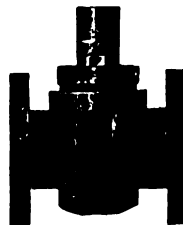


Fig. 566.

**ANGLE COCK.**  
Screwed.



Fig. 567.

**THREE WAY COCK.**  
Screwed.

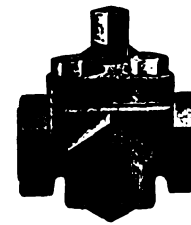


Fig. 568.

These Cocks are packed with vulcanized asbestos, so that the plug does not come in contact with metal at any point. The plug never cuts, grinds or sticks as is the case with ordinary cocks.

These Cocks always open and close easily, and remain absolutely tight where all other valves or cocks will leak. They are recommended for steam, oil, gas, ammonia in all its forms, chemicals, boiler blow-offs, or where a vacuum is required.

The regular cocks are guaranteed to stand a steam pressure of 300 lbs. per square inch, but special goods are made and guaranteed to stand 2000 lbs. per square inch.

Sizes, inches	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6
Steam Cocks, Brass, Screwed or Flanged.....	each, \$2.00	2.25	2.50	3.15	4.20	6.00	7.75	12.00	20.00	28.00				
" " " All Iron, Screwed.....		1.30	1.45	1.60	2.10	2.50	3.50	4.75	7.00	12.00	18.00	27.00	30.00	45.00
" " " Flanged.....				1.60	2.10	2.50	3.50	4.75	7.00	12.00	18.00	27.00	30.00	45.00
Ammonia Cocks, all Iron, Gland Ends.....														
Wrenches for Cocks.....		.10	.10	.10	.20	.20	.30	.40	.50	1.00	1.50	1.60	1.75	

Prices of Angle and Three Way Cocks, screwed or flanged, quoted on application.

### COCKS FOR STEAM GAUGES.

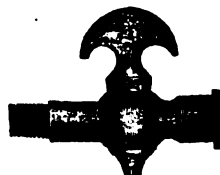


Fig. 569.

Size..... 1/4 inch.  
Each..... \$0.75

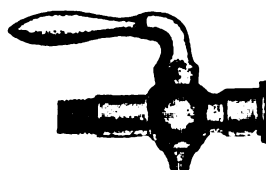


Fig. 570.

Size..... 1/4 inch.  
Each..... \$0.90

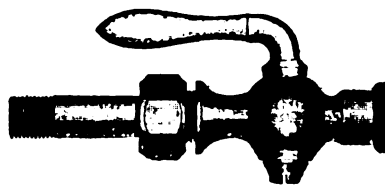


Fig. 571.

Size..... 1/4 inch.  
Each..... \$1.90

### SYPHON, FOR STEAM GAUGES.



Fig. 572.

Size for Iron Pipe..... 1/4 inch.  
Each..... \$0.50

## AIR COCKS AND AIR VALVES.—STEAM METAL.

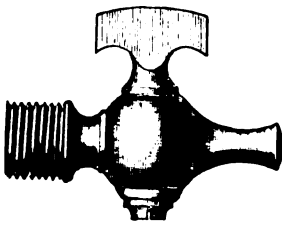


Fig. 573.

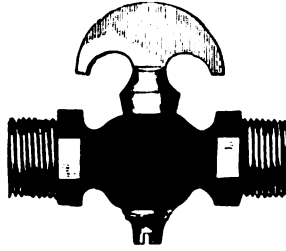


Fig. 574.

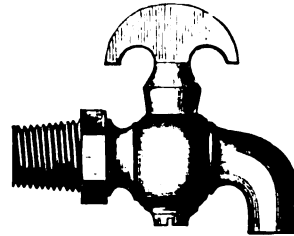


Fig. 575.

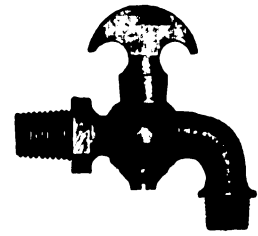


Fig. 576.

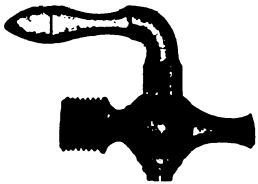


Fig. 577.

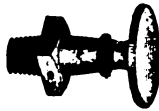


Fig. 578.

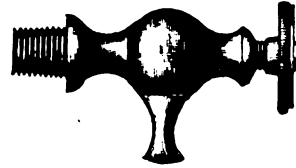


Fig. 579.

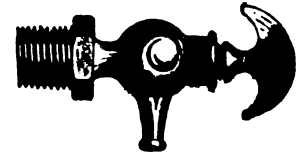


Fig. 580.

Sizes.....inches,	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$
Air Cocks, Fig. 573.....each,	\$0.40	.45	.50	.60
" " " 574....."		.80	1.10	1.50
Bibb Air Cocks, Fig. 575....."	.65	.70	.75	.85
" " " 576....."	.70	.90	1.00	1.25
Air Cocks, Fig. 577....."	.55	.60	.65	.75

Sizes.....inches,	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$
Air Valves, Fig. 578.....each,	\$0.35	.40	.45
" " " 579....."	.50	.55	.60
" " " 580....."	.50	.55	.60

Air or Bibb Cocks with Lever Handle, add to List, each \$0.15

## CYLINDER COCKS.—STEAM METAL.

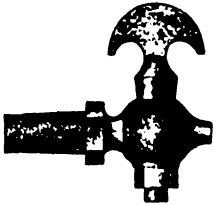
T HANDLE.  
Finished.

Fig. 581.

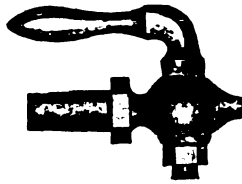
LEVER HANDLE.  
Finished.

Fig. 582.

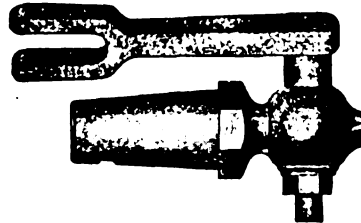
WITH CONNECTING HANDLE.  
Finished.

Fig. 583.

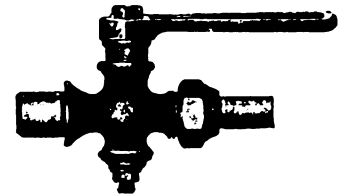
WITH STRAIGHT COUPLING.  
Rough.

Fig. 584.

Diameter of Blank Shanks.....inches,	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$
T Handle, Finished, Fig. 581.....each,	\$0.75	.85	.95
Lever " " " 582....."	.90	1.00	1.10
With Connecting Handle, Finished, Fig. 583....."	1.15	1.30	1.40
Diameter of Opening.....inches,	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$
Diameter of Blank Shanks....."	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{11}{8}$
With either Straight or Bent Coupling, Rough, Fig. 584.....each,	\$1.50	1.75	2.00
" " " " " Finished....."	1.75	2.00	2.50
With Double Coupling, Rough....."	1.75	2.00	2.50
" " " " " Finished....."	2.00	2.25	3.00

$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{11}{8}$
.85	.95	1.10	1.40	1.75
1.00	1.10	1.40	1.75	2.00
1.30	1.40	1.75	2.00	2.50
1.75	2.00	2.50	3.00	3.75
2.00	2.25	3.00	3.50	4.25

$\frac{3}{4}$	$\frac{7}{8}$	$\frac{11}{8}$	$\frac{11}{2}$	$\frac{23}{8}$
1.25	1.75	2.25	2.50	3.25
1.50	2.00	2.50	3.25	4.00
1.85	2.50	3.25	4.00	5.00
4.00	5.00	6.00	8.00	10.00
4.50	6.00	8.00	12.00	16.00
6.00	9.00	14.00	21.00	24.00
7.00	10.00	16.00	24.00	

## STEAM BIBBS.—STEAM METAL.

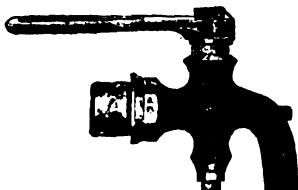
PLAIN BIBB.  
Rough.

Fig. 585.

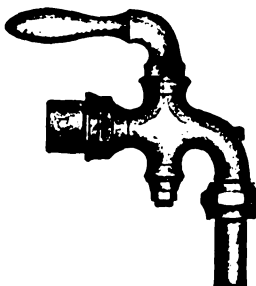
WITH COUPLING.  
Finished.

Fig. 586.

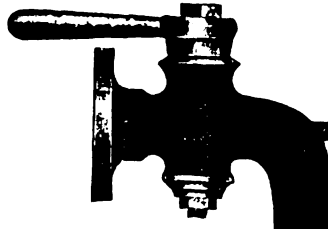
FLANGED BIBB.  
Rough.

Fig. 587.

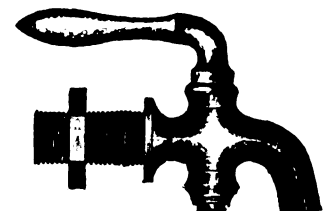
WITH THREADED  
SHANK AND LOCKNUT.  
Finished.

Fig. 588.

Diameter of Opening.....inches,	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1
Diameter of Blank Shanks....."	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{11}{8}$	$\frac{13}{8}$	$\frac{15}{8}$	$\frac{17}{8}$
Plain Bibbs, Rough, Fig. 585.....each,	\$1.00	1.25	1.50	1.75	2.50	3.50
Plain " " Finished....."	1.25	1.50	2.00	2.25	3.00	4.50
With Coupling, Rough....."	1.25	1.50	2.00	2.25	3.00	4.50
With Coupling, Finished, Fig. 586....."	1.50	1.75	2.50	2.75	3.50	5.50
Sizes.....inches,	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$\frac{11}{4}$	$\frac{11}{2}$
Flanged Bibbs, Rough, Fig. 587.....each,	\$5.00	8.00	10.00	14.00	20.00	30.00
" " " " " Finished....."	6.00	9.00	12.00	17.00	23.00	35.00
With Threaded Shank and Locknut, Finished, Fig. 588....."	\$3.00	4.00	5.00	7.00		

$\frac{11}{8}$	$\frac{13}{8}$	$\frac{15}{8}$	$\frac{17}{8}$	$\frac{19}{8}$	$\frac{21}{8}$	$\frac{23}{8}$
5.00	8.00	10.00	14.00	20.00	30.00	42.00
6.00	9.00	12.00	17.00	23.00	35.00	47.00
10.00	14.00	20.00	30.00	42.00		
12.00	17.00	23.00	35.00	47.00		

WITH BLANK SHANK.

# GAUGE COCKS, LEVER HANDLE.—STEAM METAL.

WITH LOCK NUT.

WOOD HANDLE, BLANK SHANK.

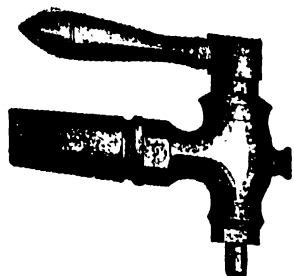


Fig. 589.

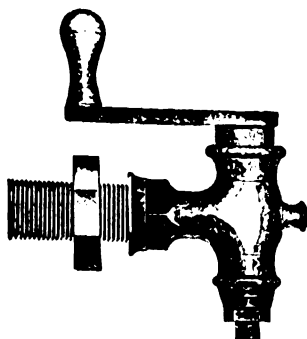


Fig. 590.

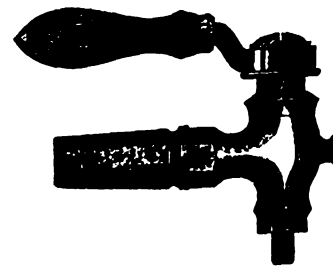


Fig. 591.

WITH LOCK NUT.

WITH TWO NUTS.

WITH LOCK NUT.

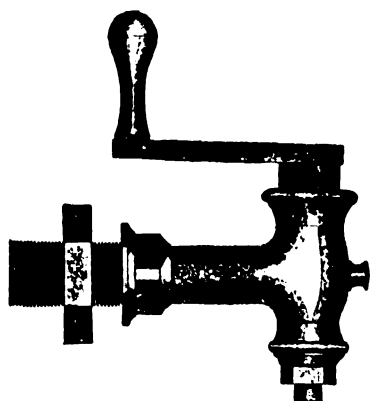


Fig. 592.

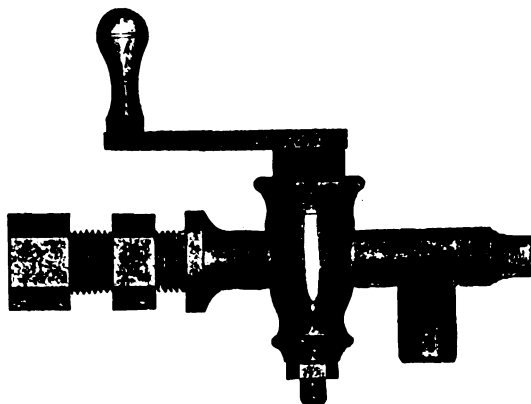


Fig. 593.

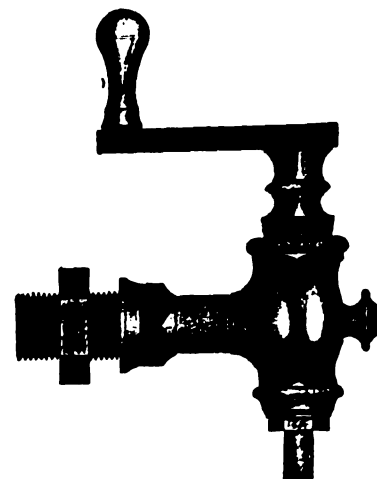


Fig. 594.

Prices, Gauge Cocks, Lever Handle.

Figs. 589 to 594.

Diameter Blank Shanks .....	inches, $\frac{7}{8}$	1 $\frac{1}{8}$	Sizes for Iron Pipe .....	inches, $\frac{1}{2}$	$\frac{3}{4}$	1
Cuts Iron Pipe to .....	" $\frac{1}{2}$	$\frac{3}{4}$	Fig. 590, Lock Nut .....	each, 3.50	\$4.00	
Fig. 589, Blank Shanks .....	each, \$3.00	3.25	Style Fig. 589, but Lock Nut .....	3.50	3.75	
Style Fig. 590, but Blank Shanks .....	"	3.50	Fig. 592, Lock Nut .....		5.00	
Fig. 591, Blank Shanks, Wood Handle .....	" 4.00	4.25	Fig. 593, " .....			8.50
Style Fig. 594, but Blank Shanks .....	"	7.00	Fig. 594, " .....		7.50	

## GAUGE COCKS. MISSISSIPPI PATTERN.

Without Spring. With Spring.



Fig. 595.

WEIGHTED COCK,  
Register Pattern.



Fig. 596.

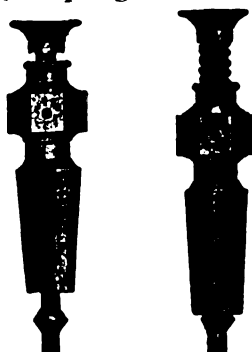


Fig. 597. Fig. 598.

Diameter Blank Shanks Inches.	Without Spring. Each.	With Spring. Each.
$\frac{1}{2}$	\$0.60	.70
$\frac{3}{8}$	.75	.85
$\frac{3}{4}$	1.00	1.15
$\frac{7}{8}$	1.25	1.45
1	1.50	1.75
1 $\frac{1}{8}$	2.00	2.35
1 $\frac{3}{8}$	2.50	3.00

GERMAN PATTERN,  
To Accompany Water Gauges, Figs. 611 & 612.  
Globe Pattern, Screwed.

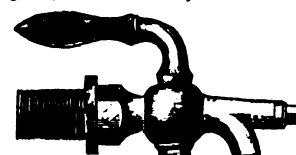


Fig. 599.

Long Pattern, Flanged.

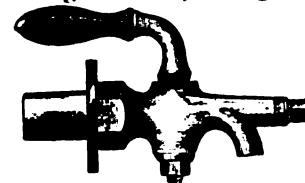


Fig. 600.

BALL COCKS. Fig. 595.		WEIGHTED COCKS. Fig. 596.	
Sizes.	Each.	Sizes.	Each.
$\frac{1}{2}$ inch.	\$1.50	$\frac{3}{8}$ inch.	\$1.00
$\frac{3}{4}$ "	1.50	$\frac{3}{4}$ "	1.10

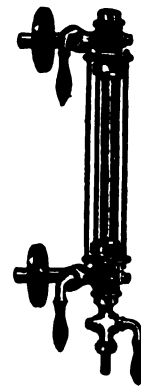
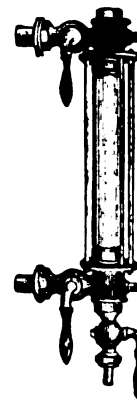
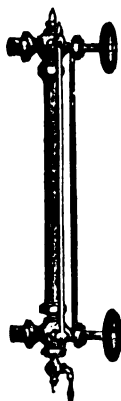
GLOBE PATTERN. Screwed.		LONG PATTERN. Screwed.	
Nos.	Each.	Nos.	Each.
27	\$2.00	30	\$2.50
28	2.50	31	3.00
29	3.00	32	3.50

## COMPRESSION GAUGE COCKS, STEAM METAL.



Fig. 601.	Fig. 602.	Fig. 603.	Fig. 604.	Fig. 605.	Fig. 606.	
Sizes .....	inches, $\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	Diameter of Blank Shafts.....inches, $\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{8}$ .
Gauge Cocks, Fig. 601 .....	each, \$0 80	.85	.95	With Loose Valve, Fig. 604.....	each,	\$3.00
" " " 602 .....	" 1.10	1.15	1.25	Lever Handle, Fig. 605.....	"	1.10
Gauge Cocks, Fig. 603, diameter Blank Shank, $\frac{7}{8}$ inches, each,		1.50		" " with Loose Valve, Fig. 606.....	"	1.60
					1.45	1.50

## WATER GAUGES, STEAM METAL.



## TWO GUARDS, ROUGH.

**Style Fig. 607.**

No. 1, with Iron Wheels, Glass, $\frac{1}{2}$ x10 in., Screwed for $\frac{3}{8}$ in. Iron Pipe	each,	\$2.75
No. 2, " " " " " $\frac{5}{8}$ x12 "	" "	3.00
No. 3, " " " " " $\frac{3}{4}$ x16 "	" "	4.50
No. 1, with Pat. Wood Wheels - Glass, $\frac{1}{2}$ x10 in., Screwed for $\frac{3}{8}$ in. Iron Pipe	each,	\$3.50
No. 2, " " " " " $\frac{5}{8}$ x12 "	" "	3.75
No. 3, " " " " " $\frac{3}{4}$ x16 "	" "	5.25

**TWO GUARDS, FINISHED.**

**Fig. 607.**

No. 8, with Iron Wheels Glass, 5x12 in., Screwed for ½ in. Iron Pipe .....	each,	\$3.50	No. 8, with Pat. Wood Wheels, Glass, 5x12 in., Screwed for ½ in. Iron Pipe.....	each,	\$4.25
No. 9, " " " 5x16 " " " "	"	5.00	No. 9, " " " 5x16 " " " "	"	5.75

**Fig. 608.**

No. 12, with Pat. Wood Wheels, Glass,  $5 \times 12$  in., Screwed for  $\frac{1}{2}$  in. Iron Pipe.....each, \$6.00      No. 13, with Pat. Wood Wheels, Glass,  $3 \times 16$  in., Screwed for  $\frac{3}{4}$  in. Iron Pipe..... each, \$7.50

### THREE GUARDS, ROUGH.

No. 4, with Iron Wheels, Glass, 5x12 in., Screwed for 1/2 in. Iron Pipe.....each, \$1.00      No. 4, with Pat. Wood Wheels, Glass, 5x12 in., Screwed for 1/2 in. Iron Pipe.....each, \$1.75

**FOUR GUARDS, ROUGH.**

**Style Fig. 609.**

No. 7, with Iron Wheels, Glass, 5x12 in., Screwed for 1/2 in. Iron Pipe.....each, \$5.00      No. 7, with Pat. Wood Wheels, Glass, 5x12 in., Screwed for 1/2 in. Iron Pipe .....each, \$5.75

**FOUR GUARDS, FINISHED.**

**Fig. 609.**

**No. 15, with Pat. Wood Wheels, Glass, 5x12 in., Screwed for 1/2 in. Iron Pipe.....each, \$6.00**      **No. 16, with Pat. Wood Wheels, Glass, 3/4x16 in., Screwed for 3/4 in. Iron Pipe .... each, \$7.50**

**LOCOMOTIVE PATTERN, FINISHED.**

**Fig. 610.**

No. 21, with Glass  $\frac{5}{8} \times 12$  in., Screwed for  $\frac{1}{2}$  in. Iron Pipe.....each, \$10.00      No. 22, with Glass  $\frac{3}{4} \times 16$  in., Flanged for  $\frac{3}{4}$  in. Iron Pipe ..... each, \$40.00

**GERMAN PATTERN, FINISHED.**

**Globe Pattern, Fig. 611.**

No. 23, with Glass	$\frac{1}{2} \times 10$ in., Screwed for $\frac{1}{2}$ in. Iron Pipe	each, \$14.00	No. 29, with Glass	$\frac{1}{2} \times 10$ in., Screwed for $\frac{1}{2}$ in. Iron Pipe	each, \$14.00
No. 24, "	$\frac{5}{8} \times 12$ " "	" 17.00	No. 30, "	$\frac{5}{8} \times 12$ " "	" 17.00
No. 25, "	$\frac{3}{4} \times 14$ " "	" 20.00	No. 31, "	$\frac{3}{4} \times 14$ " "	" 20.00
No. 26, "	$\frac{1}{2} \times 10$ Flanged	" 15.00	No. 32, "	$\frac{1}{2} \times 10$ Flanged	" 15.00
No. 27, "	$\frac{5}{8} \times 12$ " "	" 18.00	No. 33, "	$\frac{5}{8} \times 12$ " "	" 18.00
No. 28, "	$\frac{3}{4} \times 14$ " "	" 21.00	No. 34, "	$\frac{3}{4} \times 14$ " "	" 21.00
German Pattern Gauges, with Two Guards, deduct from list					2.00

**Long Pattern, Fig. 612.**

**SCOTCH GLASS TUBES.  
FOR WATER GAUGES.**

Length	inches	10	11	12	13	14	15	16	17	18	19	20	22	24	30	36	48
External Diameter, $\frac{1}{2}$ inch	per doz	\$1.80	4.80	5.40	5.40	6.00	6.60	7.20	7.80	8.40	9.00	9.60	10.80	12.00	16.00	20.00	30.00
" $\frac{3}{8}$ "		4.80	4.80	5.40	5.40	6.00	6.60	7.20	7.80	8.40	9.00	9.60	10.80	12.00	16.00	20.00	30.00
" $\frac{1}{2}$ "		6.60	6.60	6.60	6.60	7.20	7.20	7.80	8.40	9.00	9.60	10.20	11.40	12.60	20.00	25.00	35.00
" $\frac{3}{4}$ "		8.40	8.40	8.40	8.40	8.40	9.00	9.60	10.20	10.80	11.10	12.00	15.00	18.00	25.00	30.00	45.00
" 1 "		10.80	10.80	10.80	10.80	10.80	10.80	10.80	11.10	12.00	13.20	15.00	18.00	21.00	35.00	40.00	60.00

These Gauge Glasses are imported direct from Perth, Scotland, and are warranted genuine and equal to any in the market. Also furnish these tubes closed at one end, for special purposes.



OIL CUPS, STEAM METAL.

T HANDLE.

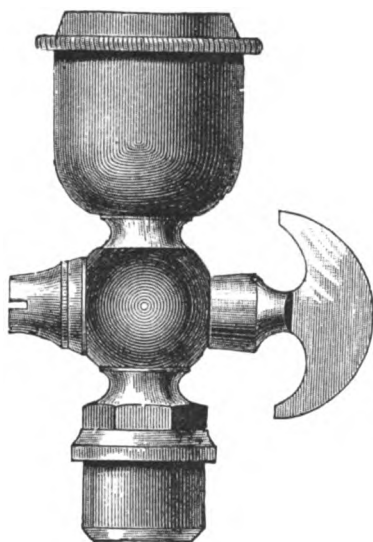


Fig. 613.

PLAIN.

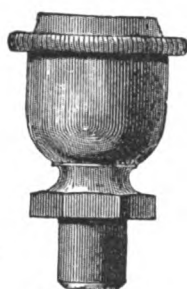


Fig. 614.

LOCOMOTIVE PATTERN. BAYONET TOP.

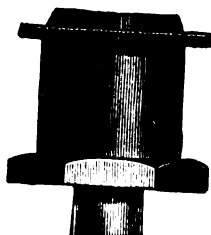


Fig. 615.

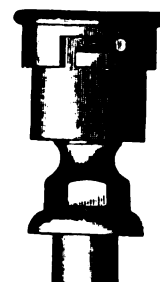


Fig. 616.

LEVER HANDLE.

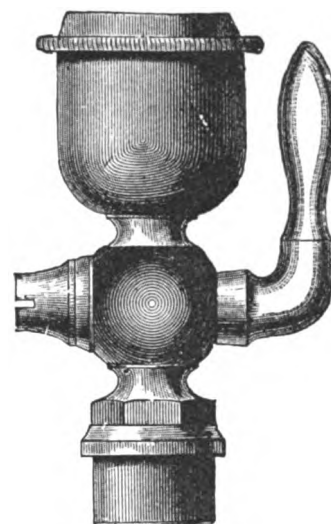


Fig. 617.

GLASS ENGINE CUP.

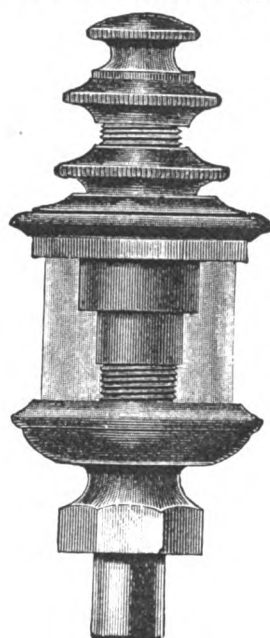


Fig. 619.

HINGED COVER.



Fig. 620.

HINGED COVER.

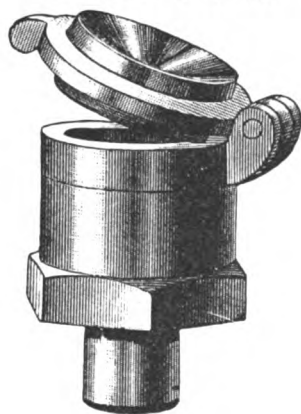


Fig. 618.

ELBOW CUP.

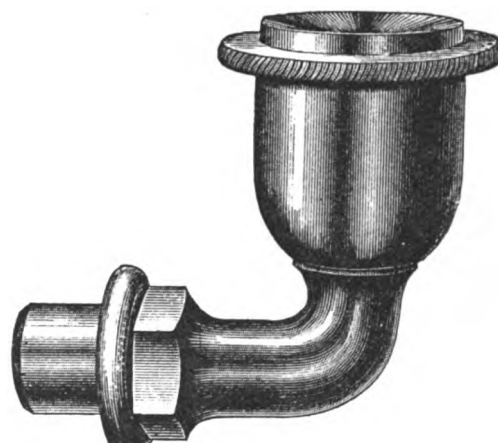


Fig. 621.

FANCY PATTERN.



Fig. 622.

OCTAGON PATTERN.



Fig. 623.

Diameter, inches.....	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3		
Cuts Iron Pipe to inches.....	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$		
Plain.....	{	Nos.,	1	2	3	4	5	6	7	8	9	10	11	12	13
Fig. 614.....		Each,	\$0.25	.30	.35	.40	.50	.60	.90	1.25	1.75	2.25	2.75	3.50	4.50
Locomotive Pattern..	{	Nos.,	14	15	16	17	18	19	20	21	22				
Fig. 615.....		Each,	\$0.35	.40	.50	.60	.75	1.00	2.00	3.00	5.00				
Hinged Covers.....	{	Nos.,	63	64	65	66	67	68							
Figs. 618 and 620..		Each,	\$0.70	.85	1.20	1.60	2.10	2.70							
Elbow Cups.....	{	Nos.,	69	70	71	72	73	74							
Fig. 621.....		Each,	\$0.50	.70	1.00	1.40	1.80	2.30							
Octagon Pattern.....	{	Nos.	37	38	39	40	41	42	43	44					
Fig. 623.....		Each,	\$1.25	1.50	1.75	2.00	3.00	3.50	5.00	7.00					
Diameter, inches.....	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	3	4	5	6			
Cuts Iron Pipe to inches.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{5}{4}$	$\frac{6}{4}$			
Glass Engine Cup.....	{	Nos.,	75	76	77	78	79	80	81	82	83	84	85	86	
Fig. 619.....		Each,	\$1.00	1.25	1.50	1.75	2.00	2.25	2.50	4.00	6.00	12.00	16.00	20.00	
Extra Glasses.....	"		.20	.20	.20	.25	.25	.30	.40	.50	.90	1.25	2.00	3.00	

Diameter, inches.....	1	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	3					
Cuts Iron Pipe to inches.....	1/4 & 3/8	1/4 & 3/8	1/4 & 3/8	3/8 & 1/2	3/8 & 1/2	1/2	1/2	3/4	3/4					
T Handle.....	{ Nos.,		45	46	47	48	49	50	51	52	53			
Fig. 613.....	{ Each,		\$1.00	1.25	1.50	2.00	2.50	3.00	3.75	4.50	6.00			
Lever Handle.....	{ Nos.,		54	55	56	57	58	59	60	61	62			
Fig. 617.....	{ Each,		\$1.10	1.35	1.60	2.20	2.75	3.25	4.00	5.00	6.50			

Diameter, inches.....	7 <sub>8</sub>	1	1 <sup>1</sup> <sub>8</sub>	1 <sup>1</sup> <sub>4</sub>	1 <sup>1</sup> <sub>2</sub>	1 <sup>3</sup> <sub>4</sub>	2	2 <sup>1</sup> <sub>4</sub>	2 <sup>1</sup> <sub>2</sub>		
Cuts Iron Pipe to inches	1 <sub>8</sub>	1 <sub>4</sub>	1 <sub>4</sub>	1 <sub>4</sub>	3 <sub>8</sub>	1 <sub>2</sub>	1 <sub>2</sub>	3 <sub>4</sub>	3 <sub>4</sub>		
Bayonet Top .. {	Nos.,	23	24		25	26	27	28	29	30	
Fig. 616 ..... {	Each,	\$0.70	.75		1.00	1.50	2.00	3.00	4.00	5.00	
Fancy Pattern, {	Nos.,	31	32	33	34	35	36				
Fig. 622 ..... {	Each,	\$0.75	1.00	1.25	1.50	2.00	3.00				

## GLOBE OIL CUPS.

T HANDLE.



Fig. 624.

LEVER HANDLE.



Fig. 625.

Diameter of Globe.....	inches,	1½	2	2¼	2½	3	3½	4	4½
Diameter of Blank Shank.....	"	¾	1	1¼	1½	1¾	2	2¼	2½
Cuts Iron Pipe to.....	"	1½	2	2¼	2½	3	3½	4	4½
T Handle, Fig. 624.....	each,	\$3.00	3.75	4.50	5.50	6.50	9.00	15.00	18.00
Lever " " 625.....	"								

## LUBRICATORS.

PLAIN.

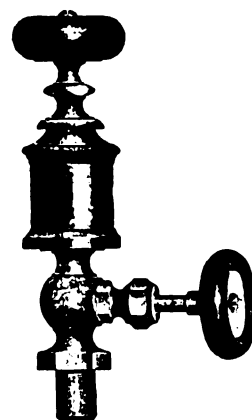


Fig. 626.

WITH AIR COCK AND TUBE.

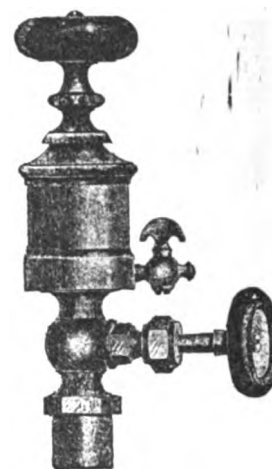


Fig. 627.

Diameter.....	inches,	¾	1	1¼	1½	1¾	2	2¼	2½	3
Diameter of Blank Shank.....	"	¾	1	1¼	1½	1¾	2	2¼	2½	3
Cuts Iron Pipe to.....	"	1½	2	2¼	2½	3	3½	4	4½	5
Plain, Fig. 626.....	each,	\$1.75	2.00	2.20	2.40	2.60	2.80	3.25	3.75	4.75
With Air Cock, Fig. 627.....	"		3.00	3.20	3.40	3.60	3.90	4.25	4.75	5.75

## PATENT SELF-ACTING LUBRICATORS.

FOR LOCOMOTIVES, MARINE ENGINES, AIR BRAKES, Etc.

PLAIN PATENT.

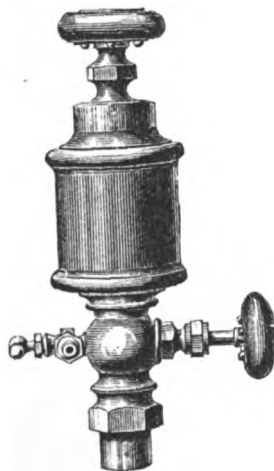


Fig. 628.

WITH YOKE.

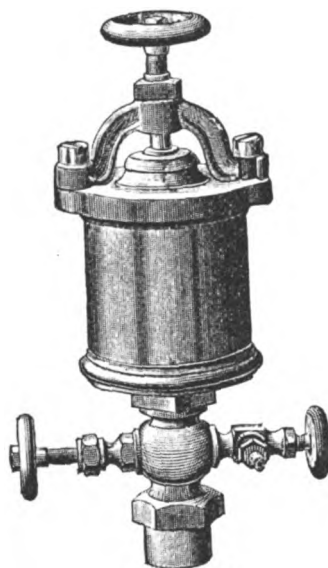


Fig. 629.

CROSS HANDLED.

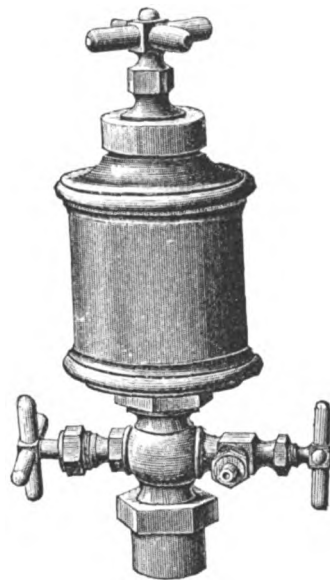


Fig. 630.

AIR BRAKE.

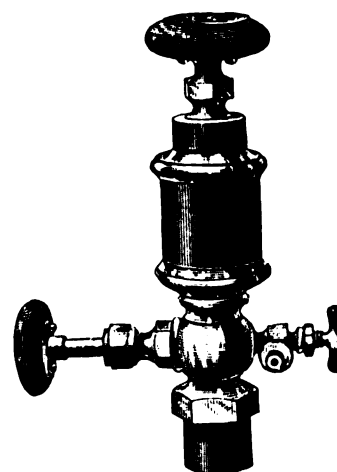


Fig. 631.

FUNNEL SHAPED TOP LUBRICATOR.

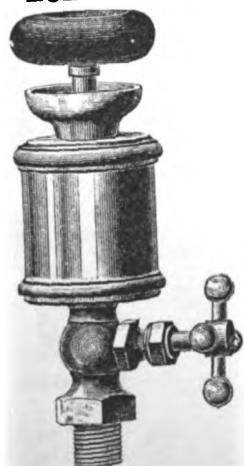


Fig. 632.

IMPROVED SEAT LUBRICATOR.

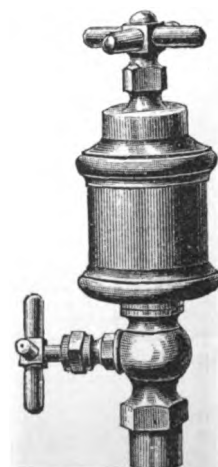


Fig. 633.

## Prices, Figs. 628, 629, 630 and 631.

Diameter.....	inches,	1	1½	1¾	2	2½	3	3½	4	5	6	7
Capacity.....	pints,	1	1½	2	3	4	5	6	8	10	12	15
Plain Pat., Fig. 628, ea.,		\$3.00	4.50	6.00	8.00	10.00	13.00	16.00				
With Yoke, " 629, "						16.00	20.00	24.00	33.00	42.00	51.00	
Cross H'd'l'd, " 630, "						14.00	18.00	21.00				
Air Brake, " 631, "		3.50	5.00	7.00	9.00	10.50						

## Prices, Fig. 632. No Waste of Oil in Filling.

Numbers.....		1	2	3	4	5	6	7
Diameter, inches.....		1½	2	2¼	2½	3	3½	4
Price per dozen.....		\$15.00	21.00	24.00	30.00	36.00	42.00	51.00
Capacity in pints.....		1	1½	2	3	4	5	6

## Prices, Fig. 633. Wood or Brass Handled.

Numbers.....		1	2	3	4	5	6
Diameter, inches.....		1½	2	2¼	2½	3	3½
Price per dozen.....		\$18.00	24.00	33.00	45.00	51.00	66.00
Capacity in pints.....		1	1½	2	3	4	6

PLAIN.

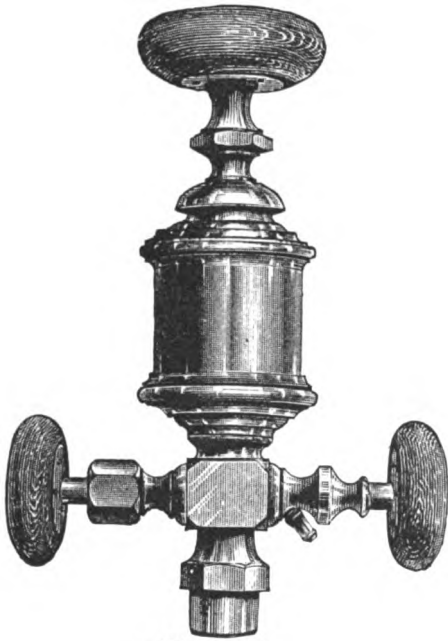


Fig. 634.

AUTOMATIC LUBRICATORS.

Prices, Automatic Lubricators, Fig. 634.

Feed by condensation only. Will feed any kind of oil or melted tallow.

Outside Diameter.	Height.	Capacity.	Price Each.
1½ inches.	6 inches.	1½ ounces.	\$3.60
2 " "	7 " "	3 " "	4.50
2½ " "	8 " "	6 " "	5.50
3 " "	9 " "	10 " "	6.50

Automatic Lubricators with Yoke, Fig. 635.

Especially adapted to steam chests of locomotive engines, air brakes, etc. Feed is secured automatically by condensation. Feed indicator on 6 inch only, except when specially ordered.

Outside Diameter.	Height.	Capacity.	Price Each.
2 inches.	7 inches.	3 ounces.	\$14.00
2½ " "	8 " "	6 " "	17.00
3 " "	10 " "	10 " "	20.00
3½ " "	11 " "	1 pint.	23.00
4 " "	12 " "	1½ " "	27.00
5 " "	14 " "	3 " "	35.00
6 " "	16 " "	5 " "	45.00

WITH YOKE.

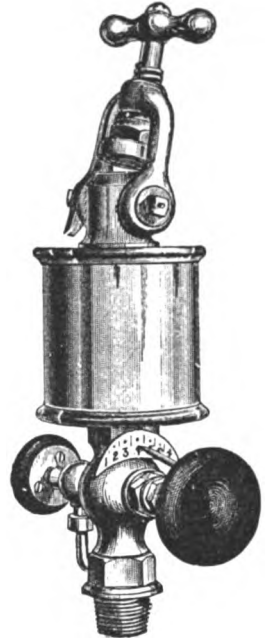


Fig. 635.

HAND CYLINDER OIL PUMPS.

HORIZONTAL PUMP.

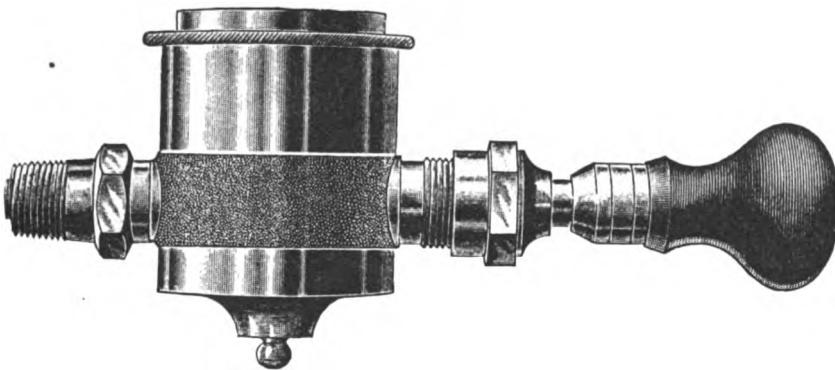


Fig. 636.

Numbers.....	1	2	3	4	5
Size of Bowl....inches,	2¼ x 2¼	2½ x 2½	2¾ x 2¾	3½ x 3½	4 x 5
Capacity.....	¼ pint.	½ pint.	¾ pint.	1 pint.	1 quart.
Price..... each,	\$3.50	4.25	5.00	7.50	12.00

PLAIN OIL PUMP.

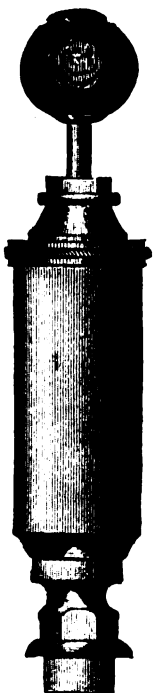


Fig. 639.  
No. 1, each \$10.00  
No. 3, " 12.00

ANGLE PUMP.

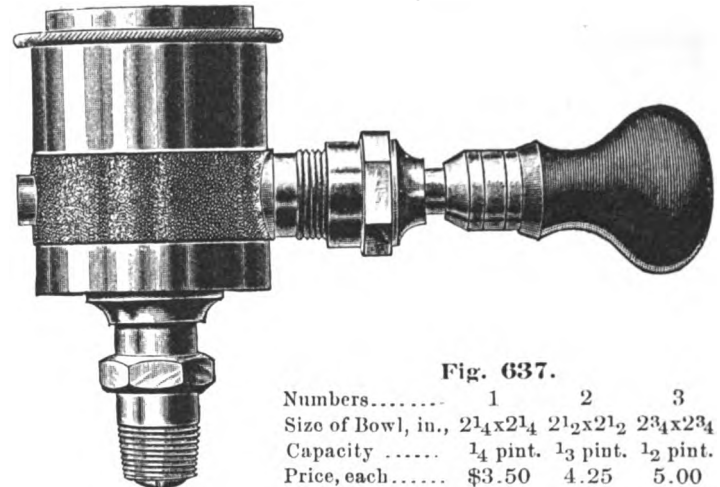


Fig. 637.

Numbers.....	1	2	3
Size of Bowl, in.,	2¼x2¼	2½x2½	2¾x2¾
Capacity.....	¼ pint.	½ pint.	¾ pint.
Price, each.....	\$3.50	4.25	5.00

PLAIN OIL PUMP,  
Side Connections.

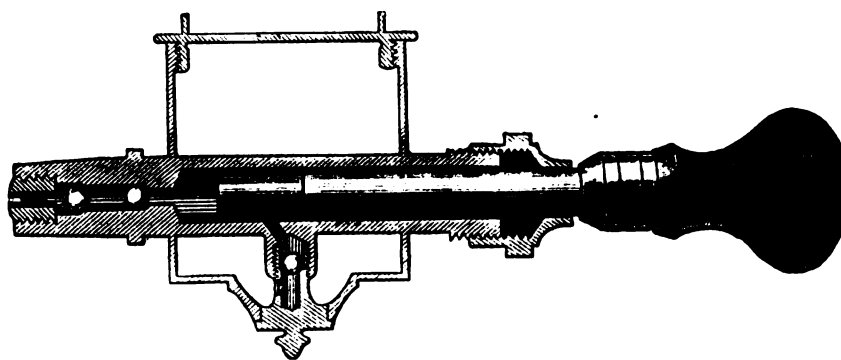


Fig. 638.

Description Hand Cylinder Oil Pumps.

Figs. 636, 637 and 638.

These Pumps are provided with hardened steel ball valves, which are well known to be the most perfect and smoothest acting check valves known to the mechanical world. They have no springs to hold the valves on their seats, as pumps with springs are continually getting out of order. The Ball Valves are constantly turning by use, thus presenting a clean surface on the seats at each stroke of the pump, keeping the valve and seat free from gum and dirt.

These Pumps are adapted to use on all kinds of engines, and are pronounced by users to be the simplest, most durable, and most perfect pumps made.

Every engine should have a Hand Oil Pump, whether it is provided with an Automatic Lubricator or not, so that in case the Automatic Lubricator should need repairing the Hand Pump can be used until it is repaired.

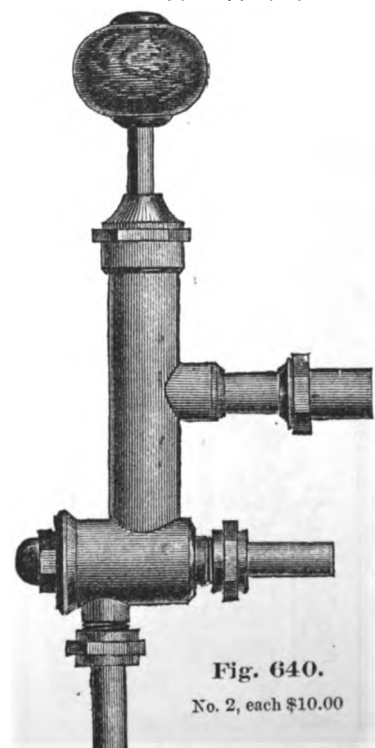


Fig. 640.  
No. 2, each \$10.00

## SEIBERT UP DROP SIGHT FEED CYLINDER LUBRICATORS.

For Marine and Stationary Engines and Pumps.

OIL CUP WITH STAND.

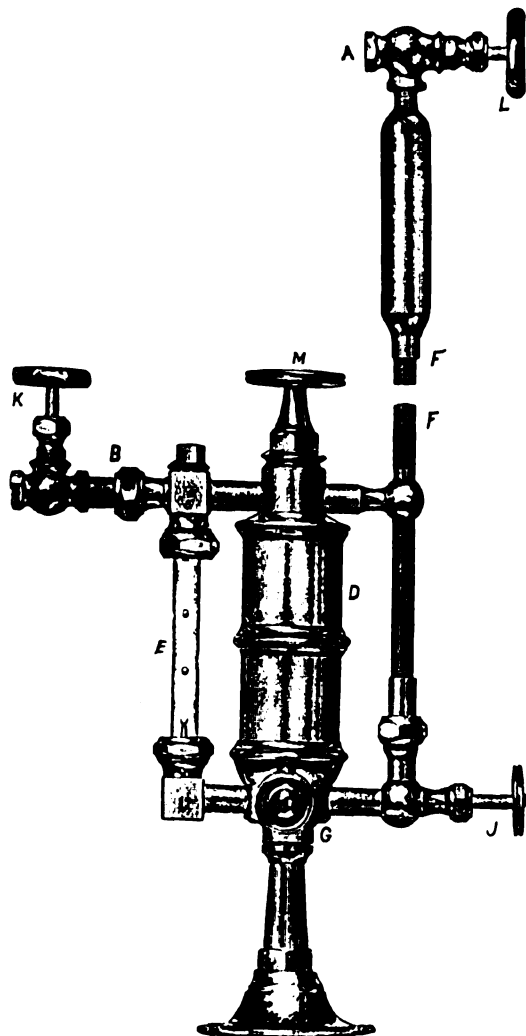


Fig. 641.

SECTIONAL CUT OF OIL CUP.

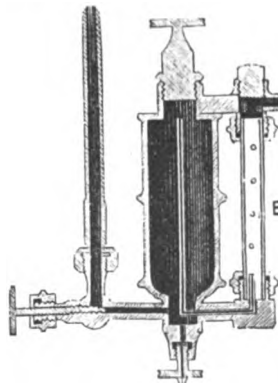


Fig. 642.

OIL CUP ATTACHED.

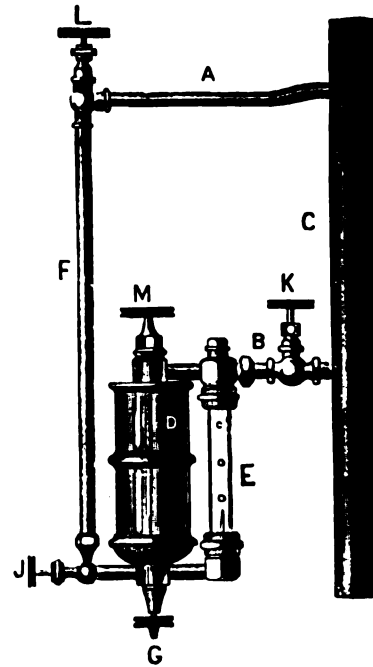


Fig. 643.

## Explanation of Parts.

- |                                 |   |
|---------------------------------|---|
| A. The condensing pipe.         | G. Waste Cock to draw off the water.                |
| B. The discharge pipe.          | J. Valve to feed the condensed water under the oil. |
| C. The steam pipe from boiler.  | K. Discharge valve.                                 |
| D. The oil cup.                 | L. The valve to admit steam.                        |
| E. Sight feed glass.            | M. Plug through which to re-fill cup.               |
| F. The pipe for c'nd's'd water. |   |

## Description.

**THE WORKING PRINCIPLE.**—The condensing pipe A and the discharge pipe B being connected with the steam pipe C, the pressure in both pipes is equal, but the steam entering pipe A condenses and fills pipe F with water, and the weight of this column of water causes the oil in the reservoir D to pass out through pipe B, and thus into the steam pipe, as fast as the water from pipe F is fed into the reservoir by valve J.

**SIGHT FEED.**—The oil forced from the reservoir passes down through the tube, shown in the sectional cut, from the top of the reservoir to the bottom of the gauge glass, and is there discharged into the water with which the glass is filled, and can be seen as it passes to the cylinder, rising, drop by drop, through the water. The quantity of oil being used is thus seen at a glance, and the feed regulated. The oil is fed in just the quantity needed continuously, and passing into the steam-pipe vaporizes and lubricates all the internal parts of the engine. Numerous cases can be cited where the engines show an average gain of several revolutions per minute since the use of this oil cup was adopted.

## Prices.

Nos.	Sizes.	For Engine. Horse Power.	Brass Finished. Each.	Nickel Plated. Each.	Nos.	Sizes.	For Engine. Horse Power.	Brass Finished. Each.	Nickel Plated. Each.
1	1/3 pint.	10	\$20.00	22.00	4	1 quart.	300	\$50.00	55.00
2	1/2 " "	25	25.00	27.50	5	1/2 gal.	500	70.00	76.00
3	1 " "	150	35.00	38.00	6	1 " "	500 or more.	90.00	98.00

## DETROIT SIGHT FEED LUBRICATORS.

For Locomotives, Stationary, Marine and Portable Engines, Air Brakes and Steam Pumps.

The method of oiling by means of these Lubricators consists in introducing the oil drop by drop into the steam pipe, where it atomizes and mingles with the steam, and is carried to every part of the valves and cylinder, lubricating all parts reached by the steam.

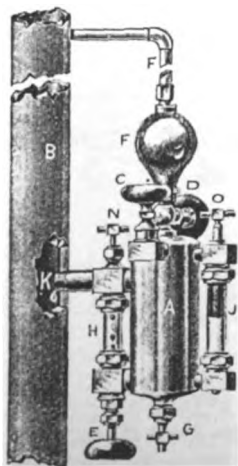
LUBRICATOR  
APPLIED.

Fig. 644.

## Explanation of Parts.

- |                                       |   |
|---------------------------------------|---|
| A. Oil reservoir.                     | H. Sight Feed Glass.                      |
| B. Steam pipe.                        | J. Glass indicators.                      |
| C. Oil filler.                        | K. Oil discharge pipe.                    |
| D. Water feed valve.                  | N. Valve to correct unsteadiness in feed. |
| E. Valve to regulate flow of oil.     | O. Vent.                                  |
| F. Steam tube and condensing chamber. | P. Water pipe.                            |
| G. Drain valve to draw off water.     | S. Oil conduit.                           |

## Prices, Single Sight Feed Cups.

Sizes.	Plain Brass. Each.	Nickel Plated. Each.	Suitable for Engine with Diameter of Cylinder as follows:
Half Pint.....	\$22.00	25.00	Up to 10 inches.
Pint.....	30.00	35.00	10 to 18 inches.
Quart.....	45.00	50.00	18 to 30 inches.
Half Gallon.....	60.00	65.00	30 and over.
Gallon.....	75.00	80.00	

## Prices, Double Sight Feed Cups.

Size.	Plain Brass. Each.	Nickel Plated. Each.	Size.	Plain Brass. Each.	Nickel Plated. Each.
Half Gallon .....	\$75.00	80.00	Gallon.....	\$90.00	96.00

## Prices, Portable Engine Lubricator without Gauge Glass.

One-third Pint.....	Plain Brass, each, \$17.00	Nickel Plated.....each, \$20.00
---------------------	----------------------------	---------------------------------

## SECTIONAL CUT.

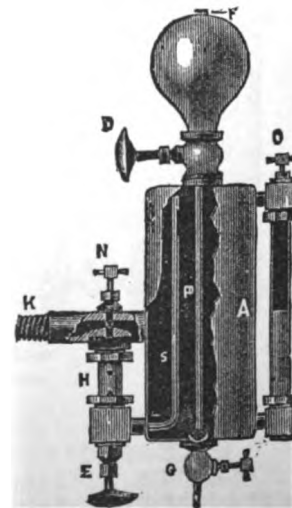


Fig. 645.

## TRIUMPH AND METEOR IMPROVED DOWN DROP SIGHT FEED CYLINDER LUBRICATORS.

### Description Triumph Lubricators.

The principle of these Lubricators is entirely new. It is impossible for the feed to pulsate, therefore a pulsation valve is dispensed with. The sight feed glass is always perfectly cool, absolutely clear and clean. The rubber gaskets in the sight feed packing nuts last longer, because they are not subjected to heat or deteriorating effect of lubricating oil. The gauge glass shows at all times the amount of oil in reservoir, an advantage found in no other lubricator.

For feeding heavy oils this lubricator is far superior to any "up drop" cup, because the "up drop" lubricator delivers its water down through a valve wide open, but permits its oil to pass up in the sight feed glass through a valve but slightly open.

These new lubricators deliver the water down through a small valve opening, and its oil out through a large unobstructed passage.

### Explanation of Parts.

- |  |  |
|--|--|
| <p>D. Sight feed glass to be independently filled with kerosene oil.</p> <p>A. Oil reservoir to be independently filled with lubricating oil.</p> <p>W. Valve to regulate feed of oil.</p> <p>O. Valve permitting oil to flow from oil reservoir to parts to be lubricated.</p> <p>F. Plug to be removed for filling sight feed glass.</p> | <p>V. Vent plug to be opened one turn when filling oil reservoir.</p> <p>E. Plug to be removed for filling oil reservoir.</p> <p>G. Drain cock to draw off water from reservoir.</p> <p>K. Plug to be removed for cleaning and renewing sight feed glass.</p> <p>J. Oil discharge arm to connect with steam pipe.</p> <p>I. Gauge glass indicating amount of oil in reservoir.</p> <p>B. Condensing chamber.</p> |
|--|--|

### Prices, Triumph Lubricators.

Polished and highly finished throughout.

FINISHED BRASS.				NICKEL PLATED.			
Capacity.	Each.	Capacity.	Each.	Capacity.	Each.	Capacity.	Each.
$\frac{1}{2}$ Pint.....	\$17.00	1 Quart.....	\$45.00	$\frac{1}{2}$ Pint.....	\$20.00	1 Quart.....	\$50.00
$\frac{1}{2}$ ".....	22.00	$\frac{1}{2}$ Gallon.....	60.00	$\frac{1}{2}$ ".....	25.00	$\frac{1}{2}$ Gallon.....	65.00
1 ".....	30.00			1 ".....	35.00		

### Description Meteor Lubricators.

The Meteor Lubricator is precisely like the Triumph in outline, principle and operation, but is cheaper in finish, the condenser and arms being gold bronzed and the body, valve stems, packing nuts and trimmings are full brass finish.

The  $\frac{1}{2}$  and  $\frac{1}{2}$  pint Meteor Lubricators are particularly adapted and unequalled for portable engines and steam pumps.

### Prices, Meteor Lubricators.

$\frac{1}{2}$ Pint.....	each, \$12.00	$\frac{1}{2}$ Pint.....	each, \$16.00	1 Pint.....	each, \$24.00	1 Quart.....	each, \$38.00
-------------------------	---------------	-------------------------	---------------	-------------	---------------	--------------	---------------

## ELLIS' IMPROVED DOWN DROP SIGHT FEED CYLINDER LUBRICATOR.

### ELLIS LUBRICATOR. Attached to Steam Pipe.

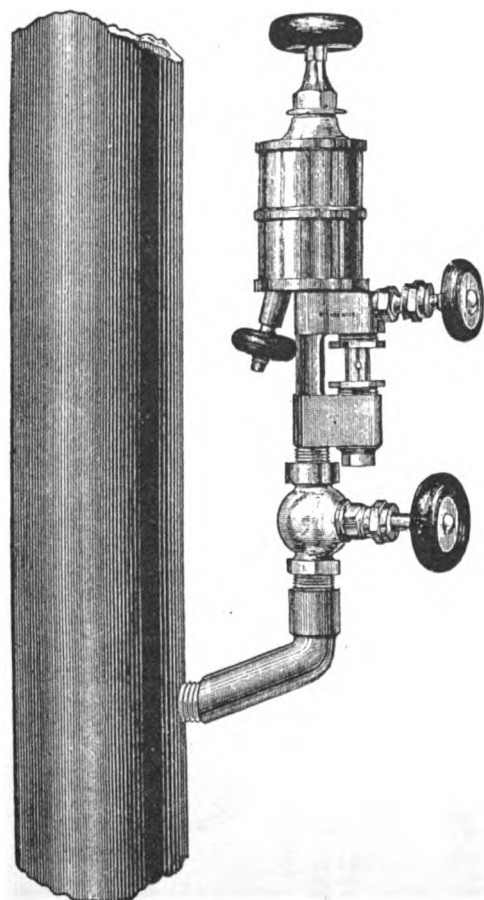


Fig. 647.

### Description.

This is a single connection cup combining all the advantages of the double connection lubricators. The condensation chamber is situated inside the oil chamber. In connection with this is the oil tube with its inlet at the top of oil chamber, thus guaranteeing a sure delivery of oil so long as any oil shall remain in the chamber.

This Lubricator is more economical than any other; it is more simple of construction and easier to operate; works equally well under high or low steam pressure, and feeds heavy or light oil, tallow or grease with equal facility; it is specially adapted to severe climates, as neither heat nor cold effect its operation.

This cup is equally well adapted to upright and horizontal engines, gives better satisfaction to users of petroleum engines than any other, and is peculiarly adapted to steam pumps and pumping engines.

### Directions for Attaching.

Tap the steam pipe six inches or more above the throttle valve,  $\frac{1}{2}$  inch standard if possible, and insert nipple with elbow attached; screw the valve furnished with cup into elbow, and screw cup into valve, making all joints tight.

Be sure that nipple is at right angles with pipe or slightly higher at the end on which the cup rests; screw the nipple so far into the pipe that the end shall intrude slightly beyond its thickness. If attached below the throttle shut the valve under the cup before closing the throttle. Always fill the cup full to the top, then turn on steam through valve under the cup. Regulate the flow of oil from valve above sight feed. The plug in rear of the stem is to draw off condensation. To fill, close valve below and unscrew the top of the cup.

### Prices.

Nickel Plated, complete, ready for attaching.

$\frac{1}{2}$ Pint.....	each, \$10.50	1 Quart.....	each, \$24.00
$\frac{1}{2}$ ".....	13.50	2 ".....	36.00
1 ".....	18.00	1 Gallon.....	48.00

Fitting will be  $\frac{1}{2}$  inch standard thread unless otherwise ordered.

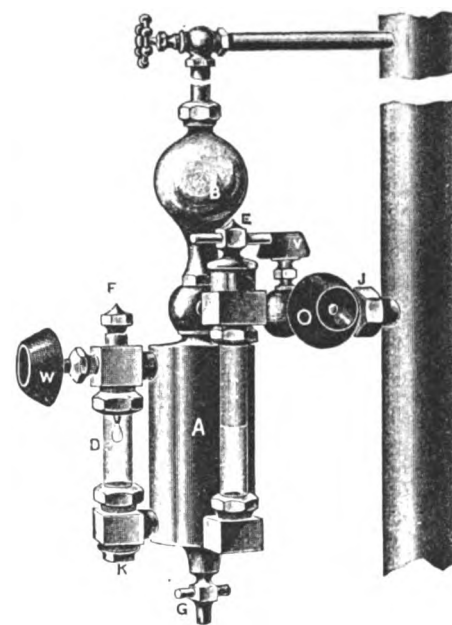


Fig. 646.

### ELLIS LUBRICATOR. Sectional View, Large Size.

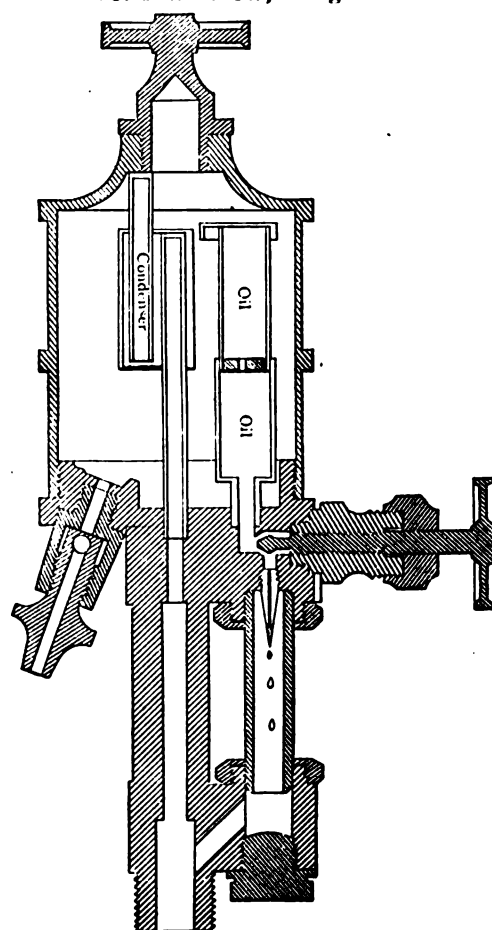


Fig. 648.



## SIGHT FEED, INDEXED AND PLAIN OILERS.

SIGHT FEED OILER.  
With Spring Pinion.

Fig. 649.

SIGHT FEED OILER.  
Without Spring Pinion.

Fig. 650.

SIGHT FEED OILER.  
With Glass Bull's Eyes.

Fig. 651.

IMPROVED OILER.  
With Index.

Fig. 652.

Fig. 649 represents the new sight feed oiler with undisturbable feed and spring pinion attachments. For electric dynamos this cup is especially valuable, as the feed regulation cannot be disturbed by vibration or accident.

Prices, Fig. 649.

Nos.	Capacity of Cups.	Diameter of Glass Shell.	Size of Shank.	Brass Finished. Per Dozen.	Nickel Plated. Per Dozen.
60	1 ounce.	1 3/4 inches.	1/4 inch.	\$39.00	\$45.00
61	1 1/2 "	1 3/4 "	3/8 "	42.00	48.00
62	2 1/4 "	2 "	3/8 "	45.00	51.00
63	3 3/4 "	2 3/8 "	3/8 "	51.00	57.00
64	6 "	2 3/4 "	1/2 "	63.00	69.00
65	10 "	3 1/8 "	1/2 "	87.00	96.00
66	1 pint.	3 1/2 "	3/4 "	111.00	123.00

Fig. 650 represents the sight feed oiler with undisturbable feed and without spring pinion attachment. Valve stem A has a friction bearing, which prevents the fluctuation of feed caused by vibration, etc.

Prices, Fig. 650.

Nos.	Capacity of Cups.	Diameter of Glass Shell.	Size of Shank.	Brass Finished. Per Dozen.	Nickel Plated. Per Dozen.
70	1 ounce.	1 3/4 inches.	1/4 inch.	\$36.00	\$42.00
71	1 1/2 "	1 3/4 "	3/8 "	39.00	45.00
72	2 1/4 "	2 "	3/8 "	42.00	48.00
73	3 3/4 "	2 3/8 "	3/8 "	48.00	54.00
74	6 "	2 3/4 "	1/2 "	60.00	66.00
75	10 "	3 1/8 "	1/2 "	84.00	93.00
76	1 pint.	3 1/2 "	3/4 "	108.00	120.00

Prices, Sight Feed Oilers, Fig. 651, with Open Sight.

Numbers 50 to 55 correspond in size and capacity with numbers 40 to 45.

Brass Finished.						Nickel Plated.					
Numbers	50	50 1/2	51	52	53	54	55	Numbers	50	50 1/2	51
Per doz.	\$27.00	30.00	33.00	39.00	51.00	75.00	99.00	Per doz.	\$33.00	36.00	39.00
									45.00	57.00	84.00
									111.00		

The Undisturbable Sight Feed Oilers, Figs. 649 and 650, are made with four styles of shanks—two holes protected with crystal lenses, two holes open, four holes protected by glass tube, four holes open as cuts.

AUTOMATIC  
LUBRICATOR.

Fig. 653.

## Description Automatic Lubricator.

Fig. 653.

This is an air-tight cup with an air tube passing down the center, which supplies to the inner body of the cup a quantity of air equal to the size of the drop which passes out, thereby counter-balancing always the quantity of oil, by the introduction of an equal quantity of air. This is absolutely the only principle by which an equal flow of oil can be obtained. Especially adapted to dynamos, electric machinery, crank pins and cross heads.

Prices, Fig. 653.

Nos.	Capacity of Cups.	To Fit Standard Pipe Top.	Brass Finished. Per Dozen.	Nickel Plated. Per Dozen.
1	1 1/2 ounces.	1/4 inch.	\$21.00	\$23.50
2	2 1/2 "	1/4 "	23.50	26.00
3	4 "	1/4 "	27.00	29.50
4	4 3/4 "	3/8 "	31.50	34.50
5	6 "	3/8 "	43.00	45.00
6	8 "	3/8 "	53.25	58.25

## Description Automatic Crank Pin Oiler.

Fig. 654.

This cup works perfectly on slow or fast running engines, being automatic to the nicest degree of sensitiveness. It can be emptied in five minutes or can be regulated to feed for four weeks. For crank pins, rapid eccentrics, cross heads, wrist pins on locomotives, and all marine, stationary, portable engines, pumps, etc.

Prices, Fig. 654.

Nos.	Capacity of Cups.	Diameter of Glass Shell.	Height of Glass Shell.	Size of Shank.	Brass Finished. Per Dozen.	Nickel Plated. Per Dozen.
1	1 ounce.	1 1/4 inches.	1 inch.	1/4 inch.	\$18.00	\$24.00
2	1 1/4 "	1 5/8 "	1 3/8 "	1/4 "	24.00	30.00
2 1/2	1 1/2 "	1 3/4 "	1 3/8 "	3/8 "	27.00	33.00
3	2 "	2 "	1 3/4 "	3/8 "	30.00	36.00
4	2 1/2 "	2 3/8 "	2 1/8 "	3/8 "	36.00	42.00
5	4 "	2 3/4 "	2 1/2 "	1/2 "	54.00	60.00
6	8 "	3 1/8 "	2 7/8 "	1/2 "	72.00	78.00

AUTOMATIC CRANK  
PIN OILER.

Fig. 654.



# DREYFUS' SELF-OILERS.

Nos. 000 to 9.  
Wood Plug.

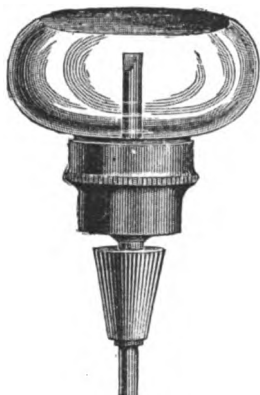


Fig. 655.

Nos. 15 & 22.  
Solid Shank.

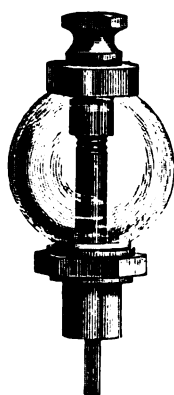


Fig. 656.

No. 13, Wall Box.  
Wood Plug.

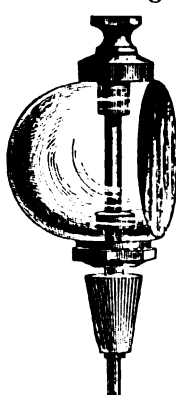


Fig. 657.

No. 10.  
Wood Plug.

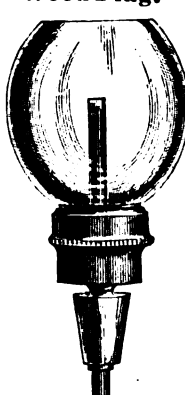


Fig. 658.

No. 10, Wall Box.  
Wood Plug.

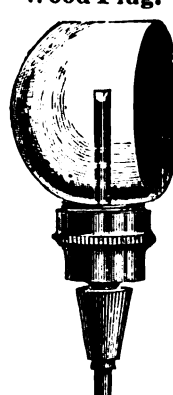


Fig. 659.

Nos. 24 & 26, Solid Shank Glass Top. Nos. A to D, Solid Shank, Brass Top.



Fig. 660.



Fig. 661.

They are composed of a transparent glass cup, mounted in brass, provided with a hollow tube, inside of which is placed a loose-acting solid or hollow wire which acts as a feeder and regulator. The cup is fixed on the bearing and the wire rests upon the journal, thereby acting with the shaft in its motions. The wire is also so regulated inside the tube as to feed according to the demand only. There is no flow of oil whatever while the machinery is not in motion; they are as reliable in winter as in summer. Being a perfectly air-tight vessel, the oil will never gum in them, as has been proved by many years' constant use.

## Directions for Using.

Fill the cup full of oil, then screw the cap down air-tight. Place the tube in the oil hole in an upright position, or upon an angle of 45 degrees. Permit the Rod to rest upon the Journal, and have a perfectly free action. If you desire the oil to flow faster, reduce the size of the wire.

## Prices, Solid Wire Feed Oil Cups, Figs. 655 to 660.

Nos.		Capacity.	Diameter.	Height.	Per doz.
000.	For Cards, Looms, Lathes or for small Journals.	3/4 oz.	1 1/2 in.	2 1/8 in.	\$4.50
000.	" " " " " " " " " " " "	3/4 "	1 1/2 "	2 1/8 "	5.00
00.	" " " " " " " " " " " "	3/4 "	1 1/2 "	2 1/8 "	4.50
0.	" " Card Cylinders, Strippers and compact connections.	1 "	2 1/4 "	2 1/2 "	4.50
0.	" " " " " " " " " " " "	1 "	2 1/4 "	2 1/2 "	5.00
3.	" " " " " " " " " " " "	1 "	2 1/4 "	2 1/2 "	4.50
9.	" " Shafts, Pickers, Looms, and Fans.	1 1/2 "	2 1/2 "	3 1/4 "	4.50
9.	" " W. B. for compact Shafts or connections.	1 1/2 "	2 1/2 "	3 1/4 "	4.50
10.	" " For Shafts, Pickers, Looms and Fans.	3 1/2 "	2 1/2 "	4 1/4 "	4.50
10.	" " W. B. for compact Shafts or connections.	3 1/2 "	2 1/2 "	4 1/4 "	4.50
11.	" " For Shafts or connections where the cups are required to be screwed in.	1 1/2 "	2 1/2 "	3 1/4 "	7.00
12.	" " For same use as No. 11.	3 1/2 "	2 1/2 "	4 1/4 "	7.00
13.	" " To fill from top.	1 1/2 "	2 1/2 "	3 1/4 "	7.50
13.	" " W. B. To fill from top.	1 1/2 "	1 3/4 "	3 1/2 "	7.50
14.	" " To fill from top.	3 1/2 "	2 1/2 "	4 "	7.50
15.	" " For Engines or connections, to fill from top, to screw in.	3 1/2 "	2 1/2 "	4 "	10.50
16.	" " small connections.	3 1/2 "	1 3/4 "	2 "	7.00
18.	" " Upright Shafts.	3 1/2 "	2 1/2 "	4 1/2 "	18.00
22.	" " small Engines and Lathes.	3 1/2 "	1 1/2 "	2 1/2 "	9.00
23.	" " Fast-running Lathes.	3 1/2 "	1 1/4 "	1 3/4 "	9.00
24.	" " Engines.	2 1/4 "	2 1/4 "	3 3/8 "	10.50
25.	" " heavy Bearings or Pillow Blocks.	8 "	3 "	6 "	18.00
26.	" " small Engines.	3 1/2 "	1 3/4 "	2 1/4 "	9.00

## Prices, Loose Pulley Cups with Hollow Wires.

Nos.		Capacity.	Diameter.	Height.	Per doz.
22.		3/4 oz.	1 1/2 in.	2 1/8 in.	\$10.50
23.		1 1/2 "	1 1/2 "	1 3/8 "	10.50
15.		3 1/2 "	2 1/2 "	4 "	12.00

## Prices, Solid Wire Feed Oil Cups, with Brass Top. Fig. 661.

Nos.		Capacity.	Diameter.	Height.	Per doz.
A.		3/4 oz.	1 1/2 in.	2 1/8 in.	\$8.00
B. Small		2 "	2 "	3 "	10.00
B.		1 1/2 "	2 1/2 "	3 1/2 "	12.00
C.		3 "	2 1/2 "	4 1/2 "	16.00
D.		8 "	3 1/2 "	5 1/4 "	20.00

## Prices, Skeleton Engine Cups. Fig. 662.

Nos.	Capacity.	Diameter.	Height.	Per doz.
30.	1/4 oz.	1 1/4 in.	2 1/2 in.	\$18.00
46.	1 "	2 1/4 "	3 1/2 "	27.00
48.	1 1/4 "	2 3/8 "	3 3/4 "	27.00
54.	1 "	2 1/4 "	3 3/8 "	27.00
60.	1 1/4 "	2 3/4 "	3 3/4 "	33.00
72.	2 "	2 3/4 "	4 1/2 "	39.00
76.	4 1/2 "	3 3/8 "	5 1/2 "	48.00
80.	8 "	3 3/8 "	5 1/2 "	66.00
90.	14 "	5 "	7 1/4 "	90.00
150.	3 pta.	6 1/4 "	8 1/2 "	180.00
32 Iron Mounted	8 oz.	4 1/2 "	6 "	21.00

## Prices, Shell Cased Engine Cups. Fig. 663.

Nos.	Capacity.	Diameter.	Height.	Per doz.
20.	1-16 oz.	1 in.	1 1/2 in.	\$12.00
21.	1/8 "	1 1/8 "	2 1/4 "	18.00
28.	1/4 "	1 1/2 "	2 1/2 "	27.00
36.	1 "	2 "	3 1/2 "	36.00
42.	1 1/4 "	2 1/2 "	4 "	36.00
60.	2 1/2 "	2 3/8 "	4 1/4 "	48.00
72.	4 1/2 "	3 "	4 1/2 "	60.00
72.	Iron Mounted	4 1/2 "	4 1/2 "	24.00
100.	1 qt.	5 3/4 "	10 "	180.00

## SHAFTING OILER.

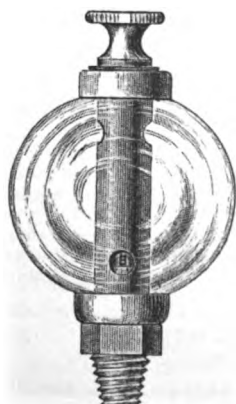


Fig. 664.

## PATENT SHAFTING AND ENGINE OIL CUPS, With Regulating Screws and Patent Adjusting Knob.

These Cups are suitable for all kinds of shafting, especially fast running, and are also well adapted for Pickers, Looms, Lathes, etc. They are provided with a threaded shank to enable them to be screwed firmly into bearings.

The supply of oil is regulated by means of a graduating slotted brass wire, and is capable of being increased or diminished with the utmost precision, by adjusting this wire, which extends upwards through the centre of the cup, and is easily reached by removing the knob. A slot in the knob enables it to be used as a wrench to adjust the regulating screw to the desired point.

## Prices, Shafting Oilers. Fig. 664.

Nos.	Capacity.	Diameter.	Height.	Per doz.
4	2 1/2 oz.	1 3/4 in.	2 1/4 in.	\$7.00
5	3 1/2 "	1 3/4 "	2 3/4 "	7.50
5 W.B.	5 "	1 3/4 "	2 3/4 "	7.50
6	2 "	2 3/16 "	3 3/8 "	9.00
7	3 1/2 "	2 3/8 "	4 "	10.50
8	5 "	3 "	4 7/8 "	13.50

## Prices, Engine Oilers. Fig. 665.

Nos.	Capacity.	Diameter.	Height.	Per doz.
5 1/2	3/4 oz.	1 3/4 in.	3 in.	\$8.00
5 3/4	1 1/2 "	2 "	3 1/4 "	9.00
6 1/2	2 "	2 3/16 "	4 "	10.50
7 1/2	3 1/2 "	2 3/8 "	4 1/8 "	13.50
8 1/2	5 "	3 "	5 1/2 "	18.00

Nickel Plating extra, from \$1.50 to \$3.00 per dozen, net, according to size.

## ENGINE OILER.



Fig. 665.

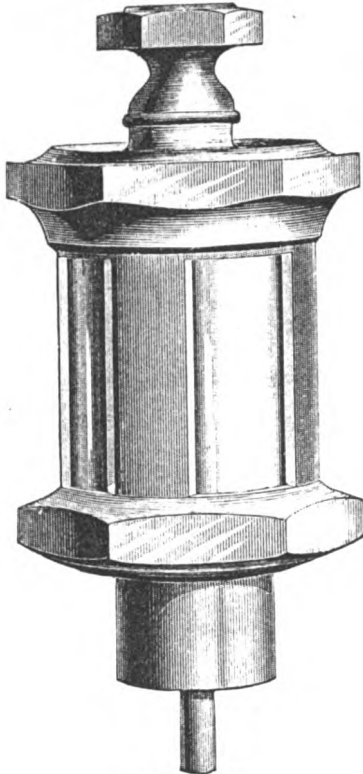
**LONERGAN'S PATENT OIL CUPS.****LOCOMOTIVE ROD CUP.**

Fig. 666.

**Description Locomotive Rod Cup.**

Fig. 666.

This cup is especially suited for rotary motion, with heavy brass case and a glass vessel therein in which the oil is contained, perfectly air-tight, so that the cup will feed only when the machinery is in motion, being perfectly automatic. It is particularly adapted to locomotive connecting rods; will run 5000 miles to one filling.

Nos.	Outside Diameter.	Height.	Capacity.	Per Dozen.
0	1 inch.	1 1/2 inch.	1 1/2 ounce.	\$12.00
30	1 1/4 "	2 1/8 "	1 1/4 "	18.00
31	1 1/2 "	2 3/4 "	1 1/8 "	21.00
32	1 5/8 "	3 1/4 "	1 1/2 "	32.00
33	1 7/8 "	3 3/4 "	1 3/8 "	36.00
34	2 1/4 "	4 1/8 "	2 1/2 "	48.00
34 1/2	2 3/4 "	4 3/4 "	3 1/2 "	60.00
35	3 1/2 "	5 1/2 "	4 1/2 "	72.00
36	4 1/2 "	7 "	10 "	84.00

**Description Locomotive Guide Cup.**

Fig. 667.

This cup is composed of an outer skeleton brass frame A A, and an inner glass vessel C C, united with cork washers D D, so that the oil will be held inside without leaking. The feed of the cup is regulated by set screw M, which passes through the rim of thumb wheel H H, and rests on nipple N, when the cup is feeding, and with the action of the screw M, the cone F can be raised as desired, so as to feed exact quantity of oil needed.

Nos.	Outside Diameter.	Height.	Capacity.	Per Dozen.
1 1/2	1 1/2 inches.	2 1/2 inch.	1 1/2 ounce.	\$21.00
1 1/4	1 1/4 "	2 3/4 "	1 1/4 "	36.00
2	1 3/4 "	3 1/2 "	1 "	48.00
3	2 "	4 "	1 1/4 "	48.00
4	2 1/4 "	4 1/2 "	2 1/4 "	60.00
4 1/2	2 3/4 "	5 "	3 1/4 "	72.00
5	3 1/2 "	5 1/2 "	4 1/2 "	84.00
6	4 1/2 "	7 "	10 "	96.00

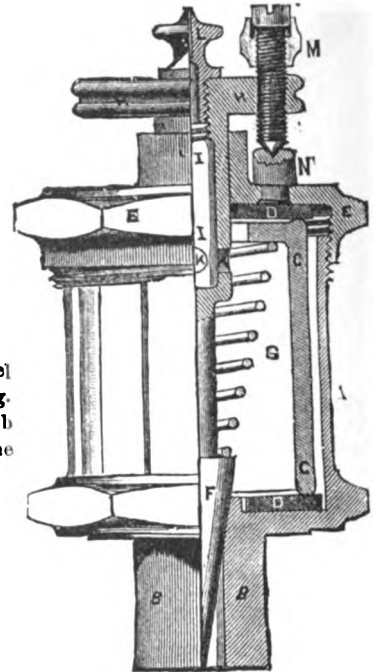
**LOCOMOTIVE, GUIDE AND STATIONARY OILERS.****LOCOMOTIVE GUIDE CUP.**

Fig. 667.

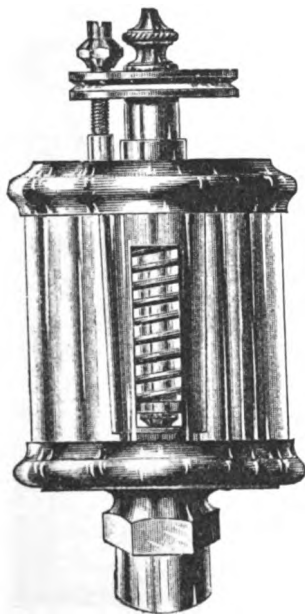
**CRANK PIN OILER.**

Fig. 668.

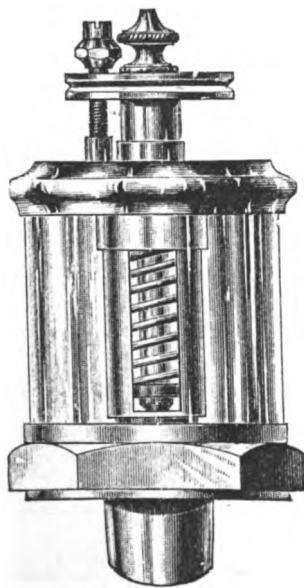


Fig. 669.

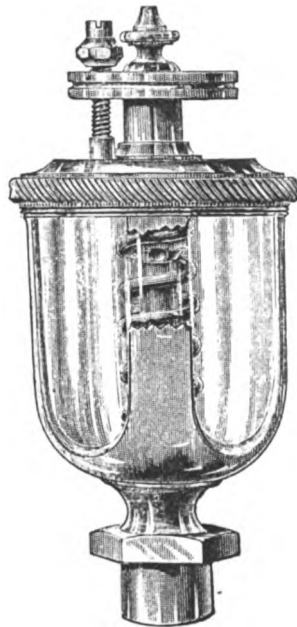


Fig. 670.

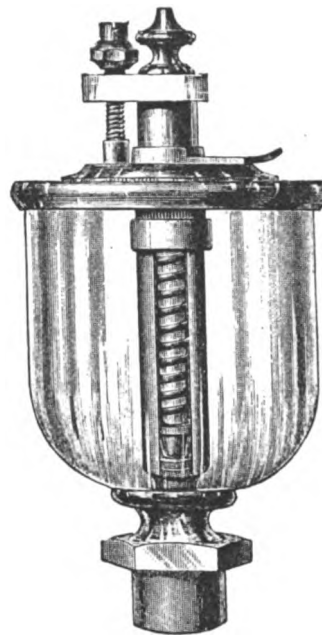


Fig. 671.

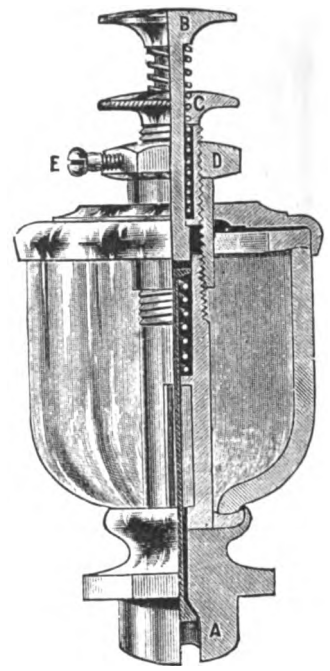


Fig. 672.

Fig. 668 represents a new design of Cup with patent adjustable feed. Suitable for any service except crank pin, when the engine revolves at a greater rate of speed than 65 revolutions per minute.

**Prices, Fig. 668.**

Nos.	Outside Diam.	Height.	Capacity.	Per Dozen.
52	1 1/2 ins.	4 ins.	1 ounce.	\$24.00
53	1 3/4 "	4 1/2 "	1 1/4 "	28.00
54	2 3/16 "	4 1/2 "	2 1/4 "	32.00
54 1/2	2 1/2 "	4 3/4 "	3 1/4 "	36.00
55	2 7/8 "	5 1/4 "	4 1/2 "	40.00
55 1/2	3 3/8 "	5 3/4 "	7 "	48.00

Fig. 669 is a flat Hexagon Base Cup, with patent adjustable feed. It is suited to all bearings except rapidly revolving crank pin connections. It is well adapted for locomotive guides and rocker boxes.

**Prices, Fig. 669.**

Nos.	Outside Diam.	Height.	Capacity.	Per Dozen.
56	1 1/2 ins.	3 3/4 ins.	1 ounce.	\$24.00
57	1 3/4 "	4 "	1 1/4 "	28.00
58	2 3/16 "	4 1/2 "	2 1/4 "	32.00
59	2 1/2 "	4 3/4 "	3 1/4 "	36.00
60	2 7/8 "	5 "	4 1/2 "	40.00
60 1/2	3 3/8 "	5 1/2 "	7 "	48.00

**Prices, Fig. 670.**

Fig. 670 is a Patent Oiler with feed regulator. Suitable for stationary, marine and locomotive engines, except high speed crank pins.

Nos.	Outside Diam.	Height.	Capacity.	Per Dozen.
16	1 1/2 ins.	2 3/4 ins.	1 1/2 ounce.	\$30.00
17	2 1/4 "	3 1/2 "	1 1/4 "	48.00
17 1/2	2 5/8 "	4 "	2 1/2 "	54.00
18	3 "	4 1/2 "	3 1/2 "	60.00
18 1/2	3 1/4 "	4 3/4 "	5 "	72.00
19	3 1/2 "	5 "	8 "	84.00

Fig. 671 represents Lonergan's Patent Oiler with feed regulator. This cup is reliable when using any kind of oil, on account of the ease with which the desired feed can be secured even when the engine or machinery to which it is attached is in motion. Adapted to stationary or marine engines. Cup has radial slide filling attachment.

**Prices, Fig. 671.**

Nos.	Outside Diam.	Height.	Capacity.	Per Dozen.
7 small.	1 7/8 ins.	3 1/2 ins.	1 1/4 ounce.	\$22.00
7	2 "	4 1/4 "	1 1/2 "	24.00
7 1/2	2 5/16 "	4 3/4 "	2 "	28.00
8	2 3/4 "	5 "	3 "	32.00
8 1/2	3 1/8 "	5 1/2 "	5 "	36.00
9	3 1/2 "	6 "	8 "	40.00

Fig. 672 is a crank pin oiler for stationary and marine engines, with adjustable feed and auxiliary plunger feed, by which instant and copious lubrication is secured while the engine is in motion.

**Directions for Operating.**

Screw down plug C into the cap until it forces valve A slightly from its seat to give the requisite feed. Then screw jam nut D down tightly on cap or rim of cup. Jam nut D need not be altered till change of feed is needed. Plug F may be removed for replenishing cup and returned to position again. When a dash of oil is needed it is only necessary to press or strike downward plunger B with the hand, which forces valve A from seat, thereby allowing the oil to pass freely from cup to bearing, without changing feed adjustment.

**Prices, Fig. 672.**

Nos.	Outside Diam.	Height.	Capacity.	Per Dozen.
62	2 ins.	3 1/2 ins.	1 1/4 ounces.	\$24.00
63	2 1/2 "	4 "	2 1/4 "	28.00
64	3 "	4 1/2 "	3 1/4 "	32.00
65	3 1/4 "	5 "	5 "	36.00
66	3 1/2 "	5 1/4 "	8 "	40.00

# LONERGAN'S PATENT OIL CUPS.

## CRANK PIN CUP.



Fig. 673.

### Description Crank Pin Cup.

Fig. 673.

This is a good Crank Pin Cup for engines and heavy bearings. The desired feed can be secured by a reduction of the diameter of the feed spindle, or by cutting off some of its length, so as to give it greater freedom and more room for the oil to pass from cup to parts needing lubrication.

Nos.	Outside Diameter.	Height.	Capacity.	Per Dozen.
20	1 1/2 inches.	2 3/4 inches.	1/2 ounce.	\$12.00
21	1 7/8 "	3 1/8 "	5/8 "	15.00
22	2 "	3 1/2 "	1 1/4 "	18.00
22 1/2	2 1/8 "	4 "	2 1/4 "	21.00
23	2 3/8 "	4 1/2 "	3 1/2 "	24.00
23 1/2	3 1/8 "	5 "	5 "	27.00
24	3 1/2 "	5 1/2 "	8 "	30.00

### Description Adjustable Crank Pin Cup.

Fig. 674.

This Cup is made with glass body particularly strong, with brass mountings. It is very strong and heavy, designed to withstand the usual thrust of the rod when the brasses are slack. Feed regulated by nut under cap.

Nos.	Outside Diameter.	Height.	Capacity.	Per dozen.
10	2 inches.	3 1/2 inches.	3/4 ounce.	\$22.00
11	2 1/8 "	4 1/4 "	1 1/4 "	24.00
12	2 5/8 "	4 3/4 "	2 "	28.00
13	3 "	5 "	3 "	32.00
14	3 3/8 "	5 1/2 "	5 "	36.00
15	3 1/2 "	6 "	8 "	40.00

## ADJUSTABLE CRANK PIN CUP.

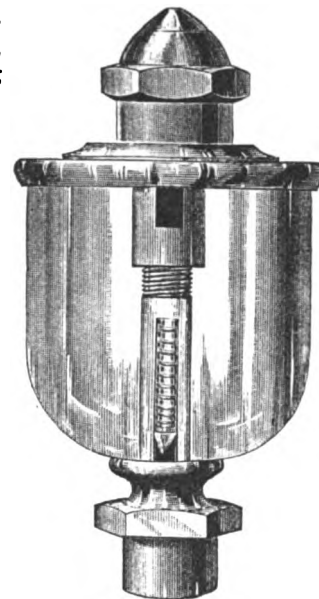


Fig. 674.

## LOOSE PULLEY OILER.

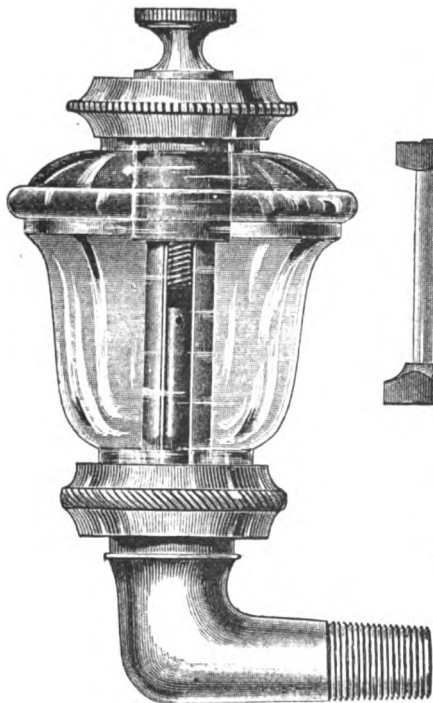


Fig. 675.

## SMALL OILER.

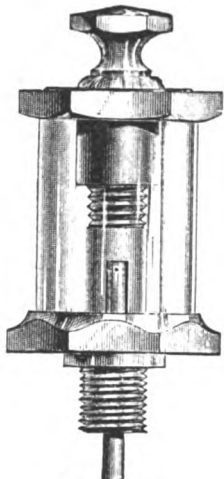


Fig. 676.

## PATENT SIGHT FEED OILER.



Fig. 677.

## SHAFTING OILER.

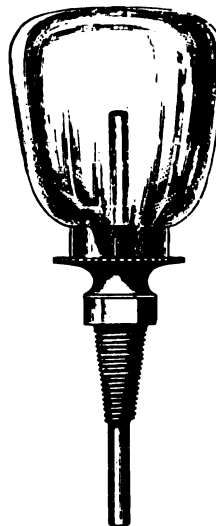


Fig. 678.

## OILER FOR SMALL ENGINES.

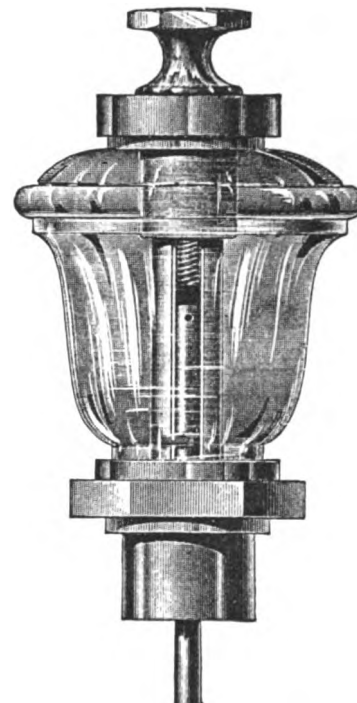


Fig. 679.

Fig. 675 is a Loose Pulley Oiler which will feed while the pulley is in motion, if attached with top facing in the direction that pulley turns; shank may be detached from cup, so as to render it convenient of attachment and avoid contact with arms of pulley. All shanks 1/8 inch gas pipe size.

### Price, Fig. 675.

Outside Diam.	Height.	Capacity.	Per doz.
1 7/8 ins.	3 1/4 ins.	1 1/8 oz.	\$18.00

Fig. 676 is an Oil Cup designed for small bearings, lathes, etc. Glass body, full size, as shown in cut. Threaded 1/8 inch iron pipe size.

### Price, Fig. 676.

Outside Diam.	Height.	Capacity.	Per doz.
1 1/8 ins.	2 ins.	1/8 oz.	\$12.00

Fig. 677 represents a most excellent Patent Sight Feed Oiler for use on electric light and power plants. They are adapted and applied to dynamos by the largest makers of electric light appliances in the United States. They are also adapted for engine pillow blocks and heavy bearings. Adjustment of feed the most simple and perfect that could be desired.

### Prices, Fig. 677.

Nos.	Outside Diam.	Height.	Capacity.	Per Dozen.
25	2 ins.	5 ins.	1 1/4 oz.	\$36.00
25 1/2	2 3/8 "	5 1/4 "	2 "	42.00
26	2 3/4 "	5 1/2 "	3 "	46.00
26 1/2	3 1/4 "	6 1/4 "	5 "	50.00
27	3 1/2 "	7 1/4 "	8 "	58.00
28	3 3/4 "	9 1/4 "	12 "	96.00
29	4 1/2 "	11 "	1 1/2 pints.	132.00

Fig. 678 shows an excellent shafting Oiler made with screwed shank and spindle feed. The glass is exceptionally strong, and will scarcely ever break by a fall from line of shafting to floor.

### Prices, Fig. 678.

Diam.	Height.	Capacity.	Shank, Pipe Size.	Per Dozen.
1 1/2 ins.	2 1/2 ins.	3/4 oz.	1/8 inch.	\$7.00
2 1/8 "	3 1/2 "	2 "	3/4 "	10.00
2 1/2 "	4 "	4 "	1 1/4 "	13.00

Furnished smooth shank, with wooden plug if so ordered.

Fig. 679 represents an Oiler for small engines, agricultural machinery, shafting, etc.

The cup is durable, ornamental and cheap.

### Prices, Fig. 679.

Nos.	Outside Diam.	Height.	Capacity.	Per Dozen.
41	1 1/2 ins.	3 1/4 ins.	1 1/8 oz.	\$12.00
42	2 1/8 "	4 1/4 "	3 "	18.00
43	2 1/2 "	5 1/4 "	5 "	24.00
44	3 "	6 "	8 "	30.00

## GREASE AND LUBRICATING COMPOUND CUPS.

ORNAMENTAL CUP.

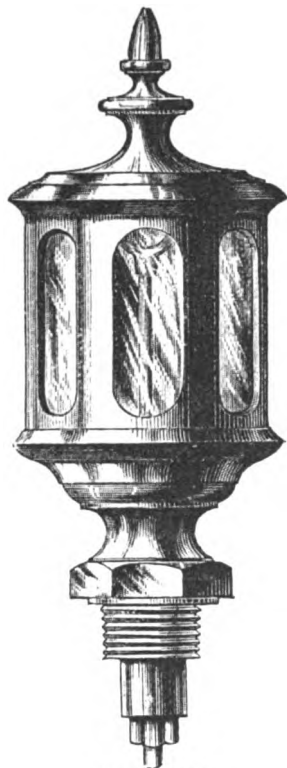


Fig. 680.

CAST BOTTOM CUP.

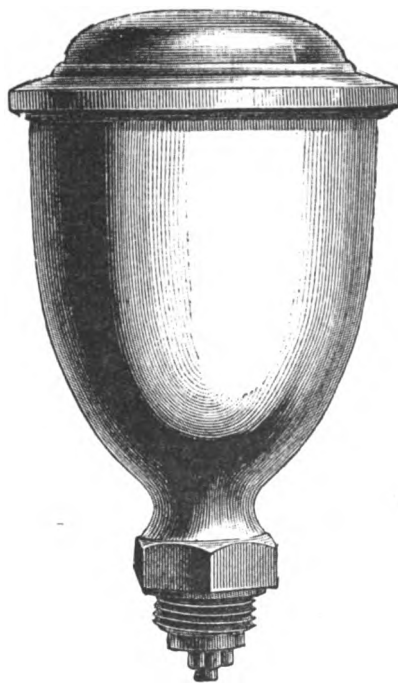


Fig. 681.

LOOSE PULLEY CUP.

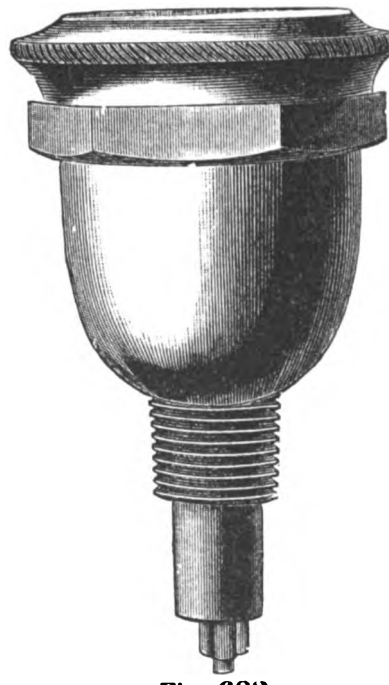


Fig. 682.

ACORN CUP.



Fig. 683.

Prices, Ornamented Cups, Fig. 680.

Nos.	Outside Diameter.	Height.	Diameter of Tubes.	Size Screw, Pipe Tap.	Plain Each.	Nickel Pl't'd Each.
1	2 1/8 in.	4 1/4 in.	1/8, 3/8 in.	1/4, 3/8 in.	\$2.50	\$3.00
2	2 3/8 in.	4 3/4 in.	1/8, 3/8 in.	3/8, 1/2 in.	3.00	3.50
3	3 in.	5 1/2 in.	1/8, 3/8 in.	1/2, 3/4 in.	4.50	5.25
4	3 3/8 in.	7 in.	1/8, 3/8 in.	1/2, 3/4 in.	5.50	6.50
5	3 3/4 in.	7 1/4 in.	1/8, 3/8 in.	3/4, 1 in.	6.50	7.50

Prices, Acorn Cups, Fig. 683.

Nos.	Outside Diameter.	Height.	Diameter of Tubes.	Size Screw, Pipe Tap.	Plain Each.	Nickel Pl't'd Each.
0	1 1/8 in.	2 1/2 in.	1/8, 3/8 in.	1/8, 1/4 in.	\$0.75	\$1.00
1	1 3/8 in.	2 3/8 in.	1/8, 3/8 in.	1/8, 1/4 in.	1.00	1.25
2	1 1/2 in.	3 3/8 in.	1/8, 3/8 in.	1/4, 3/8 in.	1.50	1.87 1/2
2 1/2	1 7/8 in.	3 3/4 in.	1/8, 3/8 in.	1/4, 3/8 in.	2.00	2.50
3	2 1/4 in.	4 1/4 in.	1/8, 3/8 in.	1/4, 3/8 in.	2.50	3.00
3 1/2	2 1/2 in.	4 3/4 in.	1/8, 3/8 in.	3/8, 1/2 in.	3.00	3.50
4	2 3/4 in.	5 3/8 in.	1/8, 3/8 in.	3/8, 1/2 in.	3.25	4.00
4 1/2	3 1/2 in.	7 in.	1/8, 3/8 in.	1/2, 3/4 in.	4.00	4.75
5	3 7/8 in.	7 1/2 in.	1/8, 3/8 in.	3/4, 1 in.	4.50	5.25
6	4 3/4 in.	9 3/4 in.	1/8, 3/8 in.	3/4, 1 in.	5.50	6.25

Prices, Cast Bottom Cups, Fig. 681.

Nos.	Outside Diameter.	Height.	Diameter of Tubes.	Size Screw, Pipe Tap.	Plain Each.	Nickel Pl't'd Each.
1	2 5/8 in.	3 5/8 in.	1/8, 3/8 in.	3/8, 1/2 in.	\$1.75	\$2.25
1 1/2	3 in.	4 1/8 in.	1/8, 3/8 in.	3/8, 1/2 in.	2.25	2.75
2	3 1/2 in.	4 3/4 in.	1/8, 3/8 in.	1/2, 3/4 in.	3.00	3.50
3	4 in.	5 1/4 in.	1/8, 3/8 in.	1/2, 3/4 in.	3.75	4.50

CAST BRASS CUP.

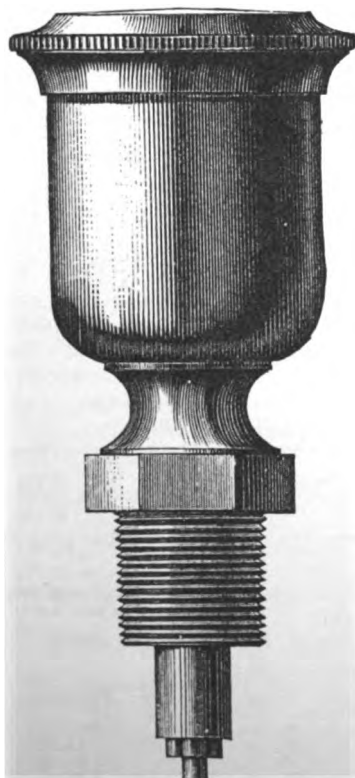


Fig. 684.

Prices, Loose Pulley Cups, Fig. 682.

Nos.	Outside Diameter.	Height.	Diameter of Tubes.	Size Screw, Pipe Tap.	Plain Each.	Nickel Plated Each.
0	1 3/4 in.	1 3/4 in.	1/8, 3/8 in.	1/8, 1/4 in.	\$1.00	\$1.25
1	2 in.	2 in.	1/8, 3/8 in.	1/4, 3/8 in.	1.50	2.00
2	2 3/8 in.	2 3/8 in.	1/8, 3/8 in.	3/8, 1/2 in.	2.25	3.00
3	3 1/8 in.	3 1/8 in.	1/8, 3/8 in.	3/8, 1/2 in.	3.00	3.75
4	3 5/8 in.	3 5/8 in.	1/8, 3/8 in.	1/2, 3/4 in.	4.00	5.00

Prices, Cast Brass Cups, Fig. 684.

Nos.	Outside Diameter.	Height.	Diameter of Tubes.	Size Screw, Pipe Tap.	Plain Each.	Nickel Plated Each.
0	1 5/8 in.	2 1/4 in.	1/8, 3/8 in.	1/8, 1/4 in.	\$1.00	\$1.25
1	1 7/8 in.	2 1/2 in.	1/8, 3/8 in.	1/4, 3/8 in.	1.50	2.00
2	2 3/8 in.	3 1/2 in.	1/8, 3/8 in.	3/8, 1/2 in.	2.25	3.00
3	3 1/4 in.	4 1/8 in.	1/8, 3/8 in.	3/8, 1/2 in.	3.00	3.75
4	3 5/8 in.	5 in.	1/8, 3/8 in.	1/2, 3/4 in.	4.00	5.00
5	4 1/2 in.	7 1/2 in.	1/8, 3/8 in.	3/4, 1 in.	5.00	6.00

Prices, Locomotive Cups, Fig. 685.

Nos.	Outside Diameter.	Height.	Diameter of Tubes.	Plain Each.	Nickel Plated Each.
1	2 1/8 in.	2 7/8 in.	1/8, 3/8 in.	\$2.00	\$2.50
2	2 3/8 in.	3 3/8 in.	1/8, 3/8 in.	2.50	3.00

## Directions for Ordering Cups.

Pages 82 and 83.

Give the diameter and depth of oil hole through cap and brass from top of former to shaft, so that tubes of proper length and size may be sent, stating if there is a casting or obstruction of any kind on the cap, and in this case give its nature and dimensions, that the feed may be regulated in the tubes.

Also state the diameter of shaft and number of revolutions per minute.

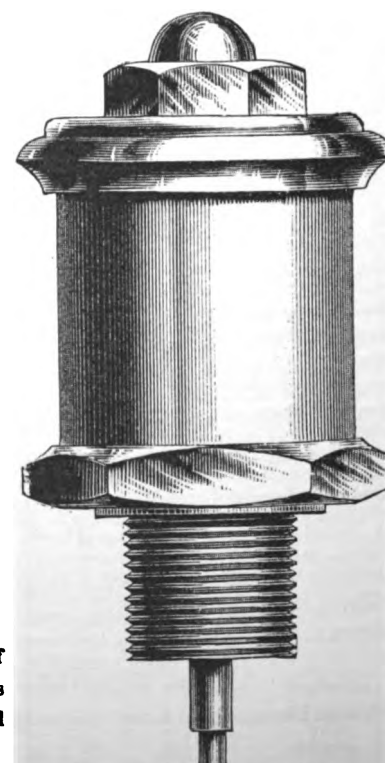


Fig. 685.



# GREASE AND LUBRICATING COMPOUND CUPS.

GLASS CUP, CAST BOTTOM.

GLASS CUP, NO SCREW.

SHEET BRASS OR ZINC CUP.

GLASS OFFSET CUP.



Fig. 686.



Fig. 687.



Fig. 688.

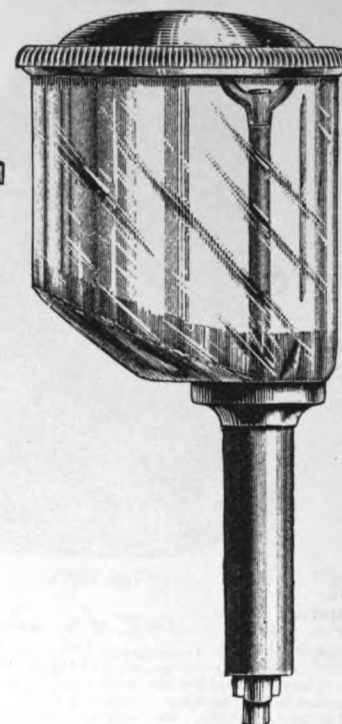


Fig. 689.

## Prices, Glass Cups, Cast Bottom. Fig. 686.

Nos.	Outside Diameter.	Height.	Diameter of Tubes.	Size Screw, Pipe Tap.	Plain. Each.
1	2 <sup>3</sup> / <sub>8</sub> in.	3 <sup>3</sup> / <sub>4</sub> in.	<sup>5</sup> / <sub>16</sub> , <sup>3</sup> / <sub>8</sub> in.	1 <sup>1</sup> / <sub>4</sub> , 3 <sup>1</sup> / <sub>8</sub> in.	\$1.75
1 <sup>1</sup> / <sub>2</sub>	2 <sup>5</sup> / <sub>8</sub> "	4 <sup>1</sup> / <sub>4</sub> "	<sup>3</sup> / <sub>8</sub> , <sup>7</sup> / <sub>16</sub> , <sup>1</sup> / <sub>2</sub> "	3 <sup>3</sup> / <sub>8</sub> , 1 <sup>1</sup> / <sub>2</sub> "	2.25
2	3 "	4 <sup>3</sup> / <sub>4</sub> "	<sup>1</sup> / <sub>2</sub> , <sup>5</sup> / <sub>16</sub> , <sup>3</sup> / <sub>8</sub> , <sup>1</sup> / <sub>2</sub> "	1 <sup>1</sup> / <sub>2</sub> , 3 <sup>1</sup> / <sub>4</sub> "	2.75

## Prices, Glass Cups. Fig. 687.

Nos.	Outside Diameter.	Height.	Diameter of Tubes.	Size Screw, Pipe Tap.	Plain. Each.
1 <sup>1</sup> / <sub>2</sub>	2 in.	2 <sup>1</sup> / <sub>2</sub> in.	<sup>5</sup> / <sub>16</sub> , <sup>3</sup> / <sub>8</sub> , <sup>7</sup> / <sub>16</sub> in.		\$0.75
1	2 <sup>3</sup> / <sub>8</sub> "	3 "	<sup>3</sup> / <sub>8</sub> , <sup>7</sup> / <sub>16</sub> , <sup>1</sup> / <sub>2</sub> "		1.00
1 <sup>1</sup> / <sub>2</sub>	2 <sup>5</sup> / <sub>8</sub> "	3 <sup>3</sup> / <sub>8</sub> "	<sup>7</sup> / <sub>16</sub> , <sup>1</sup> / <sub>2</sub> , <sup>3</sup> / <sub>8</sub> "		1.25
2	3 "	3 <sup>7</sup> / <sub>8</sub> "	<sup>9</sup> / <sub>16</sub> , <sup>3</sup> / <sub>8</sub> , <sup>1</sup> / <sub>2</sub> "		1.50

## Prices, Sheet Brass Cups. Fig. 688.

Nos.	Outside Diameter.	Height.	Diameter of Tubes.	Plain. Each.	Nickel Plated. Each.
1	2 <sup>5</sup> / <sub>8</sub> in.	2 <sup>3</sup> / <sub>4</sub> in.	<sup>3</sup> / <sub>8</sub> , <sup>7</sup> / <sub>16</sub> , <sup>1</sup> / <sub>2</sub> in.	\$1.25	\$1.50
1 <sup>1</sup> / <sub>2</sub>	3 "	3 <sup>1</sup> / <sub>8</sub> "	<sup>7</sup> / <sub>16</sub> , <sup>1</sup> / <sub>2</sub> , <sup>3</sup> / <sub>8</sub> "	1.75	2.00
2	3 <sup>1</sup> / <sub>2</sub> "	3 <sup>7</sup> / <sub>8</sub> "	<sup>7</sup> / <sub>16</sub> , <sup>3</sup> / <sub>8</sub> , <sup>1</sup> / <sub>2</sub> "	2.25	2.75
3	4 "	4 <sup>1</sup> / <sub>4</sub> "	<sup>9</sup> / <sub>16</sub> , <sup>3</sup> / <sub>8</sub> , <sup>1</sup> / <sub>2</sub> "	3.00	3.50
4	5 "	5 <sup>1</sup> / <sub>4</sub> "	<sup>3</sup> / <sub>4</sub> , <sup>7</sup> / <sub>8</sub> , 1 "	3.75	4.25

## Offset Cup. Fig. 689.

This cut shows Glass Offset Cup, which is the same dimensions and prices as Glass Cup No. 1, Figs. 686 and 687 and these cups, also No. 1 Zinc Cups, which are also made with the offset tubes, and of the same dimensions and prices, are for shafting where hangers will allow cups with straight tubes.

CRANK PIN CUP,  
For Beam Engine.

## Prices, Sheet Zinc Cups. Fig. 688.

Nos.	Outside Diameter.	Height.	Diameter of Tubes.	Plain. Each.
1	2 <sup>5</sup> / <sub>8</sub> in.	2 <sup>3</sup> / <sub>4</sub> in.	<sup>3</sup> / <sub>8</sub> , <sup>7</sup> / <sub>16</sub> , <sup>1</sup> / <sub>2</sub> in.	\$1.00
1 <sup>1</sup> / <sub>2</sub>	3 "	3 <sup>1</sup> / <sub>8</sub> "	<sup>7</sup> / <sub>16</sub> , <sup>1</sup> / <sub>2</sub> , <sup>3</sup> / <sub>8</sub> "	1.25
2	3 <sup>1</sup> / <sub>2</sub> "	3 <sup>7</sup> / <sub>8</sub> "	<sup>7</sup> / <sub>16</sub> , <sup>3</sup> / <sub>8</sub> , <sup>1</sup> / <sub>2</sub> "	1.75
3	4 "	4 <sup>1</sup> / <sub>4</sub> "	<sup>9</sup> / <sub>16</sub> , <sup>3</sup> / <sub>8</sub> , <sup>1</sup> / <sub>2</sub> "	2.25
4	5 "	5 <sup>1</sup> / <sub>4</sub> "	<sup>3</sup> / <sub>4</sub> , <sup>7</sup> / <sub>8</sub> , 1 "	3.00

CRANK PIN CUP,  
For Propeller Engine.

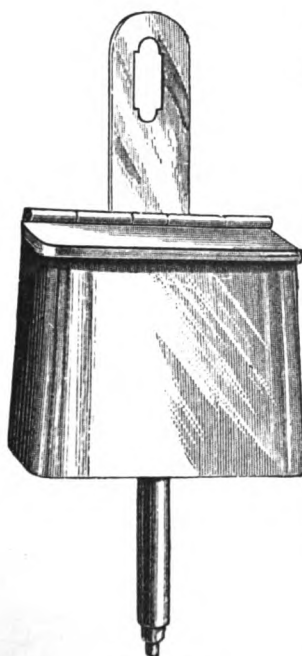


Fig. 690.

## Directions for Ordering Cups. Fig. 690.

Give the width of space between the crank and crank-shaft. Have the hole close to the stub end through the collar of the brasses to the journal.

If the hole should be on a bevel, state the bevel, also the depth and diameter of the hole from the top of the collar of the brasses to the journal.

## SHEET METAL CUP.

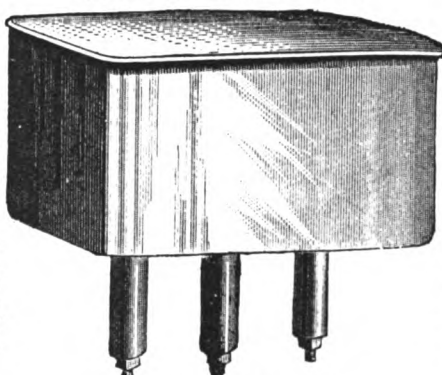


Fig. 691.

## Directions for Ordering Cups. Fig. 692.

Give width of space between the crank and crank-shaft. The diameter of the connecting rod 3 inches above the stub end and the distance from the top of stub end to the crank-pin journal.

Set-screw on the connecting rod is required to hold cup in position.



Fig. 692.

When ordering Sheet Metal Cups, Figs. 690, 691 and 692, send a sketch of cup with measurements. Prices according to size and dimensions of cups.

## PERFECTION OIL TANK.



Fig. 693.

Capacity, gallons.....	6	12	25	60
Price, each.....	\$5.00	6.00	7.50	12.00
Capacity, gallons.....	100	150	200	250
Price, each.....	\$18.00	24.00	30.00	33.00

These Tanks are made of heavy galvanized iron with wooden bottom secured underneath the metal bottom to give additional strength. Handsomely japanned and ornamented.  
Set of Measures (4) and Funnel.....extra, \$1.50  
Brass Padlock and Stop Cock....." 1.25

## PLAIN OIL TANK.

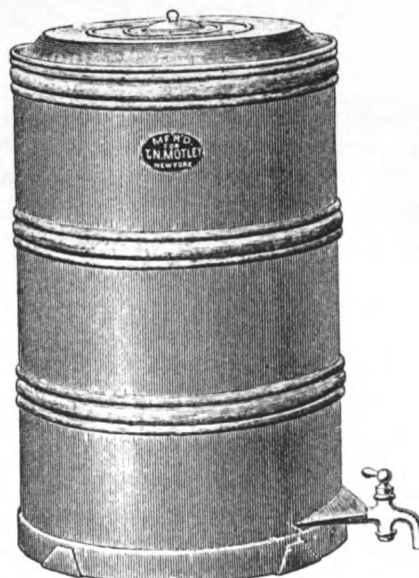


Fig. 694.

Capacity, gallons.....	15	20	30	40
Diameter, inches.....	14	15 1/4	18 1/8	18 1/8
Height, ".....	24	27	28	37
Tinned.....each, \$5.00	5.75	6.75	7.75	
Galvanized....." 6.25	7.00	8.00	9.00	
Capacity, gallons.....	50	60	80	100
Diameter, inches.....	18 1/8	20 1/2	22 1/2	22 1/2
Height, ".....	45	43	48	60
Tinned.....each, \$8.00	9.25	10.25	12.25	
Galvanized....." 9.25	10.50	11.50	13.50	

## A AND H OIL TANK.



Fig. 695.

Capacity, gallons.....	A TANKS.	60	100	150	200	250
Price.....each, \$9.75	H TANKS.	15.50	20.00	22.50	25.00	

Capacity, 55 gallons.....each, \$7.50  
The above Tanks are not equal to the Perfection, Fig. 693, but are good cheap tanks. Japanned and neatly ornamented.  
Set of Measures (4) and Funnel.....extra, \$1.50  
Brass Pad Lock and Stop Cock....." 1.25

## WILEY'S SAFETY OIL CABINETS.

## 180 GALLON FACTORY CABINET WITH THREE COMPARTMENTS.



Fig. 696.

Prices, Factory, Machine Shop, Railroad, Brewery and S. S. Cabinets.

Capacity, gals.	Size, inches.	The Factory Cabinets are all 39 inches high front and back.	Each.
25	16x16	36 inches high, \$20.00	
60	26x28	for one barrel, 25.00	
110	26x49	for two barrels, 35.00	
120	26x54 with two compartments	" 45.00	
160	26x68	for three barrels, 40.00	
170	26x70 with two compartments	" 50.00	
180	26x80 with three compartments	" 60.00	
210	26x86	for four barrels, 45.00	
220	26x88 with two compartments	" 55.00	
260	26x98	for five barrels, 50.00	
270	26x100 with two compartments	" 60.00	
300	26x128 with five compartments	" 90.00	

Each Factory and Store Cabinet is supplied with a tin pump for pumping oil from the barrel into the cabinet, or four feet of rubber tubing for syphoning the oil from the barrel into cabinet as preferred, and full set of measures.

## 60 GALLON SINGLE STORE CABINET.



Fig. 697.

Prices, Grocers', Dealers', Family and Hotel Cabinets.

Capacity, gals.	Size, inches.	Store Cabinets are all 49 inches high at the back.	Each.
60	22x32	for one barrel, \$25.00	
110	26x41	for two barrels, 35.00	
120	26x48 with two compartments	" 45.00	
160	26x56	for three barrels, 40.00	
170	28x58 with two compartments	" 50.00	
180	28x70 with three compartments	" 60.00	
210	34x58	for four barrels, 45.00	
220	34x60 with two compartments	" 55.00	
260	34x69	for five barrels, 50.00	
270	34x72 with two compartments	" 60.00	
300	34x96 with five compartments	" 90.00	



OIL CABINETS, CANS, ETC.

PERFECTION OIL CABINET.



Fig. 698.

SQUARE OIL CAN,  
Plain Tin.

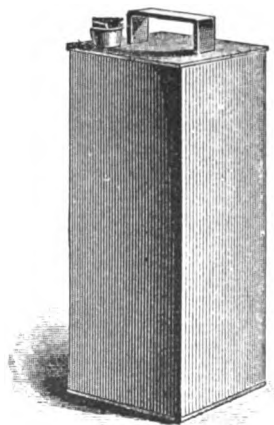


Fig. 699.

DRUM OIL CAN,  
Tinned Iron.



Fig. 700.

Prices and Description Perfection Oil Cabinets. Fig. 698.

This Cabinet is made entirely of iron. When opening the cabinet the front slides over the rear part and no space is required above the cabinet for resting the cover, thus allowing cabinet to stand under a shelf or close to the wall.  
The interior is provided with an ample permanent shelf for the measures and is lined with heavy galvanized iron with proper pump, etc., as shown in cut.

Iron Cabinets.

120 Gallons Capacity, 1 Compartment	each, \$22.00
120 " " 2 " "	" 27.00

Iron Cabinets, Wood Encased.

120 Gallons Capacity, 1 Compartment	each, \$30.00
120 " " 2 " "	" 36.00
180 " " 2 " "	" 45.00

Prices, Square Oil Cans. Fig. 699.

Capacity, 1 Gall.	1/2 Pint.	1 Pint.	1 Quart.	1/2 Gal.	1 Gal.	2 Gal.	5 Gal.
Each, \$0.06	.07	.09	.11	.15	.18	.30	.40

Prices, Drum Oil Cans. Fig. 700.

Capacity.	Diameter.	Height.	Each.	Capacity.	Diameter.	Height.	Each.
1 1/2 gal.	5 ins.	6 1/2 ins.	\$0.70	11 gals.	15 1/4 ins.	19 1/2 ins.	\$3.85
2 " "	6 1/4 " "	8 1/4 " "	.75	15 " "	15 1/4 " "	20 3/4 " "	4.00
3 " "	7 3/4 " "	10 " "	.90	16 " "	15 1/4 " "	22 " "	4.20
5 " "	10 1/4 " "	15 1/4 " "	1.85	17 " "	15 1/4 " "	23 1/4 " "	4.25
6 " "	11 1/2 " "	15 " "	2.50	18 " "	15 1/4 " "	24 1/2 " "	4.50
7 " "	12 3/4 " "	14 " "	3.00	20 " "	15 1/4 " "	27 1/4 " "	4.65
8 " "	13 " "	14 3/4 " "	3.05	25 " "	18 1/8 " "	23 1/2 " "	5.50
10 " "	13 " "	18 3/4 " "	3.35	27 " "	18 1/8 " "	25 3/4 " "	5.80
12 " "	14 " "	19 1/4 " "	3.75	30 " "	18 1/8 " "	28 1/2 " "	6.50
13 " "	15 1/4 " "	18 3/4 " "	3.80				

Drum Oil Cans Galvanized when so ordered.

STANDARD  
BOX CAN.

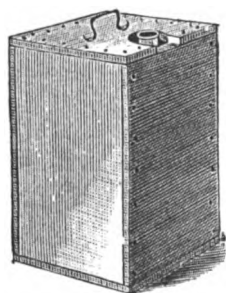


Fig. 701.

Capacity.	Each.
1 Gallon.	\$0.40
2 " "	.50
3 " "	.60
5 " "	.75
10 " "	1.20

PATENT FAUCET  
SQUARE CAN.

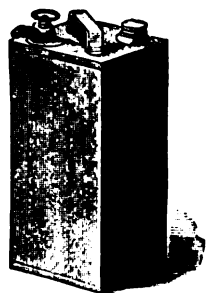


Fig. 702.

WITH BANKER'S PATENT FAUCET.	
Capacity.	Each.
1 Gallon.	\$0.25
2 " "	.35
5 " "	.50

PLAIN ROUND  
OIL CAN,  
Screw Top.

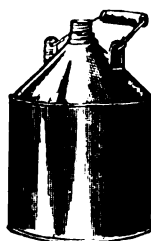


Fig. 703.

Capacity.	Per doz.
1 Gallon.	\$2.28
2 " "	3.80
3 " "	4.56
5 " "	7.00
10 " "	9.52

LARGE SPOUT  
JACKET CAN.



Fig. 704.

CORK LINED SCREW TOPS.	
Capacity.	Each.
1 Gallon.	\$0.60
2 " "	.70
3 " "	.80
5 " "	1.00

CONE TOP  
JACKET CAN.



Fig. 705.

Capacity.	Each.
1 Gallon.	\$0.40
2 " "	.50
3 " "	.60
5 " "	.75
10 " "	1.20

GREASE PAIL,  
Tin.



Fig. 706.

KEROSENE CAN,  
Tin.



Fig. 707.

Capacity.	Per doz.
1 Quart.	\$1.52
2 " "	1.80
4 " "	2.28

FUNNEL,  
Tin, Rimmed.



Fig. 708.

Capacity.	Each.
1 gill.	\$0.07
1/2 pint.	.08
1 " "	.10
1 quart.	.15
2 " "	.20
4 " "	.30
4 " Rimmed.	.40

OIL PUMP,  
Tin.



Fig. 709.

Diam.	Discharge.	Each.
1 1/2 ins.	3 ft. long.	\$1.50
1 1/2 " "	4 " "	2.00
1 1/2 " "	5 " "	2.50
1 1/2 " "	6 " "	3.00

MEASURE,  
Tin.



Fig. 710.

Made of X Tin and warranted correct

Prices, Tin Measures. Fig. 710.

Capacity.	Each.	Capacity.	Each.
1/2 pint.	\$0.12 1/2	2 quarts.	\$0.40
1 " "	.17 1/2	1 gallon.	.60
1 quart.	.25		

MEASURE,  
Galvanized Iron.

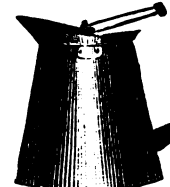


Fig. 711.

Prices, Galvanized Iron Measures. Fig. 711.

Capacity.	Each.
2 gallon, Extra Heavy.	\$2.50
3 " "	3.50
5 " "	4.50

OIL WASTE CAN,  
Galvanized.



Fig. 712.

SELF-CLOSING COVERS.  
Diameter. Height. Each.  
11 1/4 ins. 15 ins. \$1.50  
Any size desired made to order at short notice.

Capacity.	Each.
5 pounds.	\$0.16
10 " "	.20
25 " "	.35
50 " "	.50

Prices, Galvanized Iron Funnels. Fig. 708.

Capacity.	Each.
5 Gallons.	\$1.50

## MACHINE, BENCH AND POCKET OILERS.

CHACE'S PATTERN.

HERO AUTOMATIC.

PRIOR'S PARAGON.

EXTRA OR BROUGHTON.

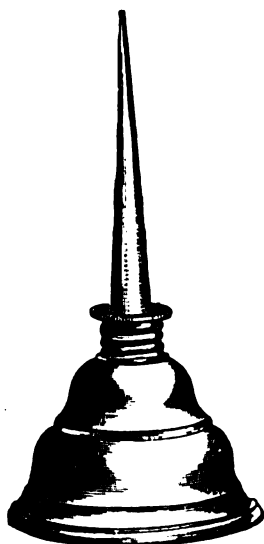


Fig. 713.

Zinc Oilers, Tin Bottoms.

Nos....	0	1	1½	2	3	4	5	6
Per doz.	\$1.00	1.25	1.35	1.50	1.75	2.25	3.00	4.00

Zinc Oilers, Brass Bottoms.

Per doz.	\$1.25	1.50	1.75	2.00	2.25	3.00	4.00	5.00
----------	--------	------	------	------	------	------	------	------

Brass or Copper Oilers.

Per doz.	\$2.25	2.50	2.75	3.00	3.50	4.50	5.75	7.50
----------	--------	------	------	------	------	------	------	------

MOWING MACHINE  
OILER.

Fig. 714.

Zinc Oilers.

Nos....	0	1	2	3
Per doz.	\$2.75	3.00	3.60	4.00

Brass Oilers.

Per doz.	\$4.75	5.00	6.00	7.00
----------	--------	------	------	------

Copper Oilers.

Per doz.	\$4.75	5.00	6.00	7.00
----------	--------	------	------	------

Any of above Oilers furnished with bent spouts when so ordered.

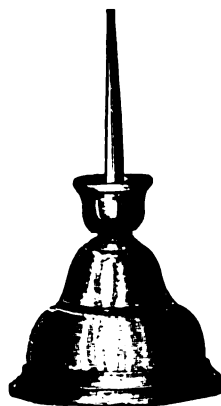
SEWING MACHINE  
OILER.

Fig. 715.

Zinc Oilers, Tin Bottoms.

Nos....	0	1	1½	2	3	4	5	6
Per doz.	\$1.75	2.00	2.25	2.50	2.75	3.25	4.00	5.00

Zinc Oilers, Brass Bottoms.

Per doz.	\$2.00	2.25	2.50	3.00	3.50	4.00	5.00	6.00
----------	--------	------	------	------	------	------	------	------

Brass or Copper Oilers.

Per doz.	\$2.75	3.25	3.75	4.00	4.75	5.50	6.75	8.00
----------	--------	------	------	------	------	------	------	------

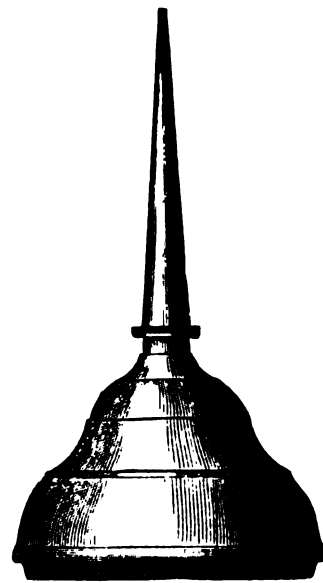
PATENT BENCH BICYCLE OR POCKET  
OILER.

Fig. 716.

Zinc Oilers, Tin Bottoms.

Nos....	1	2	3	4	5
Per doz.	\$1.35	2.25	3.25	4.50	6.00

Zinc Oilers, Br. Bottoms.

Per doz.	\$1.85	2.75	3.75	5.00	6.50
----------	--------	------	------	------	------

Brass or Copper Oilers.

Per doz.	\$2.75	3.75	5.00	6.25	7.75
----------	--------	------	------	------	------

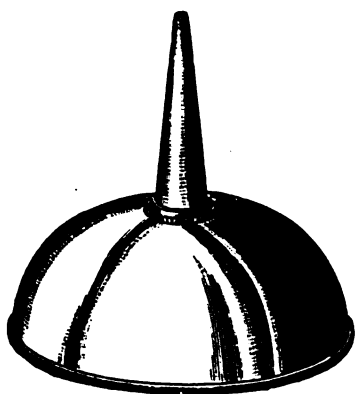
MALLEABLE IRON  
OILER,  
Old Style.

Fig. 717.

MOWING MACHINE OILER.

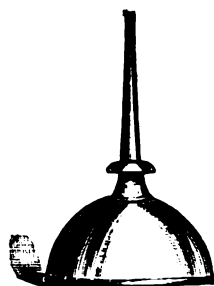


Fig. 718.

Zinc, Tin or Japanned Tin.

Per gross.....\$12.00



Fig. 719.



Fig. 720.

Tin, plain.....	per gr.,	\$20.00
Brass, ".....	"	25.00
Brass, Fancy, Nickel, "	"	30.00

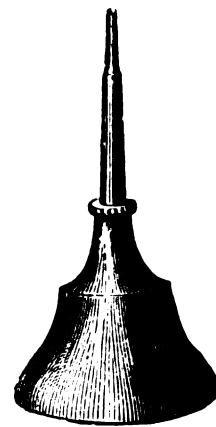


Fig. 721.

MALLEABLE IRON OILER.  
New Style.

## Prices, Bench Oilers. Fig 719.

Nos.	Tin.	Tin. Brass Bottom.	Brass.	Tin. Br. Bot'm, Steel Tip.
1, per doz.	\$1.50	\$1.75	\$3.00	\$2.25
2, " "	1.60	2.00	3.75	2.75
3, " "	2.50	3.00	5.00	3.50

## Prices of Extra Spouts for Bench Oilers.

Tin, 4¼ in., 40c.	5½ in., 45c.	9 in 60c. per doz.
Brass, 4¼ " 60c.	5½ " 75c.	9 " \$1.00 "
Steel Tips, 4¼ in., \$1.00 per doz.		

## Prices, Mowing Machine Oilers. Fig. 717.

	Per gross.		Per gross.
3¾ inches diameter.	In boxes, \$20.00	In bulk,	\$18.00
3 " "	" 19.50	" "	17.50

## Prices, Mowing Machine Oilers. Fig. 722.

Oval, Spring Bottom, holding 1 pint.....	per gross,	\$22.00
Round, " " 1 " "	" "	21.00



Fig. 722.



Fig. 723.

**DEVERALL'S ENGINE OILERS.**  
Straight. Flaring.

**ENGINEERS' DRIP LOCOMOTIVE OILER.**



Fig. 724.

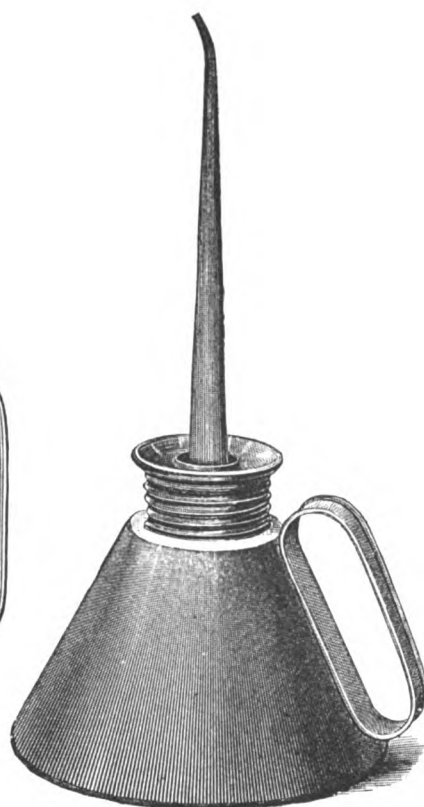


Fig. 725.

**DEVERALL'S LOCOMOTIVE OILER**

**Advantages of the Deverall Engine Oilers.**  
The ball valve is intended to give vent, and to carry all drippings on outside of spout back into can, thus keeping outside perfectly clean. It is easily cleaned out and filled, requires no funnel, and has what is often a great convenience—a reversible spout, which can be instantly changed to any position desired. These engine cans are now furnished with new double base spout, making them much stronger than formerly and at the same time retaining all the patented advantages.

**Prices, Deverall Engine Oilers.**

Figs. 724 and 725.

No.	Spout.	Tin.	Tin.	Brass.	Brass.	Copper.
		Straight.	Flaring.	Flaring.	Straight	Straight.
1,	8 ins., per doz.	\$2.90	3.75	11.00	9.25	10.00
2,	8 " "	3.25	4.25	13.75	11.75	12.50
3,	8 " "	3.75	4.75	15.75	12.50	13.50

**SPECIAL OILERS.**

No. 2,	H'vy Tin, wired bottoms, st'g't, per doz.	\$5.40
No. 3,	" " " "	5.75
No. 1,	" " " flaring	5.25
No. 2,	" " " "	6.00

**EXTRA SPOUTS OR FILLERS.**

	Tin.	Brass.
8 inch long.....per doz.,	\$0.85	\$1.25
10 " " " " " "	1.00	1.75
15 " " " " " "	1.15	1.90
18 " " " " " "	1.25	2.25
21 " " " " " "	1.50	2.50

The capacity of these Oilers is about as follows: No. 1, pint; No. 2, 1½ pints; No. 3, 2 pints. Put up ½ doz. in box. All cans on list have 8 inch spouts. If longer are desired, deduct price of 6 inch spout and add cost of spout required.

**HORIZONTAL LOCOMOTIVE OILER.**



Fig. 728.

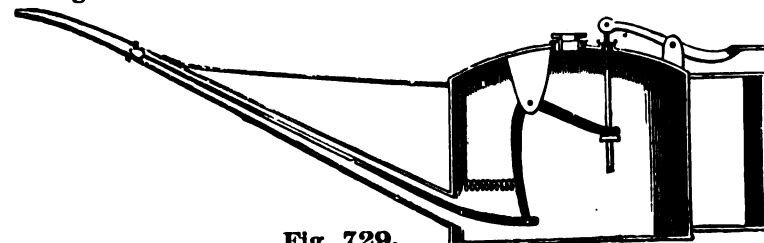


Fig. 729.

Tin, 1 pt., with valve, per doz.,	\$24.00	Brass, 1 pt., with valve, pr doz.,	\$36.00
" 2 " " " "	33.00	" 2 " " " "	48.00

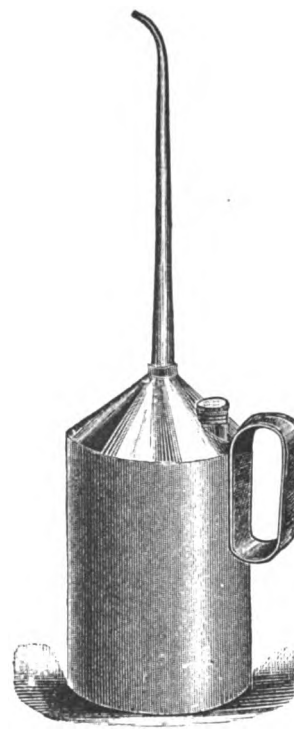


Fig. 726.

**Prices, Engineers' Drip Oilers.**

Fig. 726.

**ZINC.**

Capacity.....	1 pint.	1½ pints.	1 quart.
Per dozen.....	\$3.75	4.25	4.50

**BRASS.**

Capacity.....	1 pint.	1½ pints.	1 quart.
Per dozen.....	\$12.00	16.00	20.00

**Prices, Locomotive Oilers.**

Fig. 727.

The flow of oil from this can is easily regulated by the Pneumatic Thumb Valve D, which quite supersedes the old expensive spring valve and costs less.

**TIN.**

1 pint.....	per dozen, \$14.00
1 quart.....	" " 16.00

**BRASS.**

1 pint.....	per dozen, \$20.00
1 quart.....	" " 24.00

**Prices, Locomotive Oilers.**

Fig. 728.

**TIN.**

1½ pint.....	per dozen, \$9.60
3 pints.....	" " 12.00

**BRASS.**

1½ pint.....	per dozen, \$19.00
3 pints.....	" " 24.00

**Prices, Locomotive Oilers.**

Fig. 730.

**TIN.**

1 pint, with valve.....	per dozen, \$24.00
2 " " " " " "	" " 33.00
1 " no valve.....	" " 12.00
2 " " " " " "	" " 21.00

**BRASS.**

1 pint, with valve.....	per dozen, \$36.00
1½ " " " " " "	" " 42.00
2 " " " " " "	" " 48.00
3 " " " " " "	" " 60.00
1 " no valve.....	" " 24.00
2 " " " " " "	" " 36.00

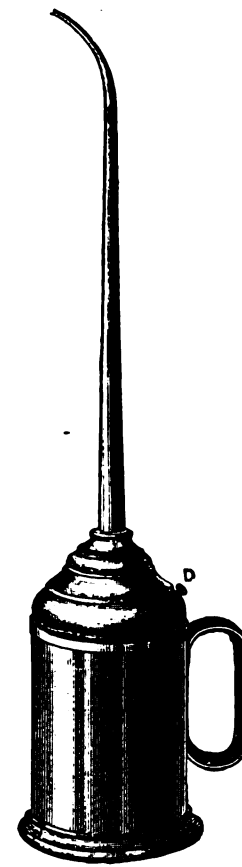


Fig. 727.

**UPRIGHT LOCOMOTIVE OILER.**

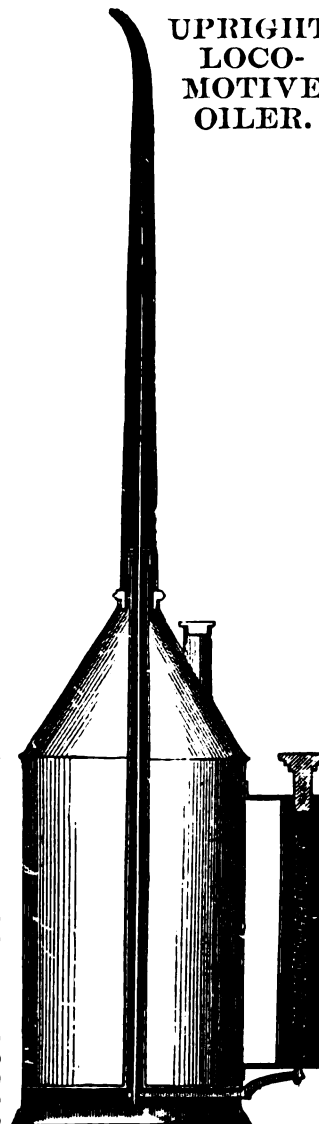


Fig. 730.

## ENGINEER'S OILER SETS.

OILER SET, No. 20.

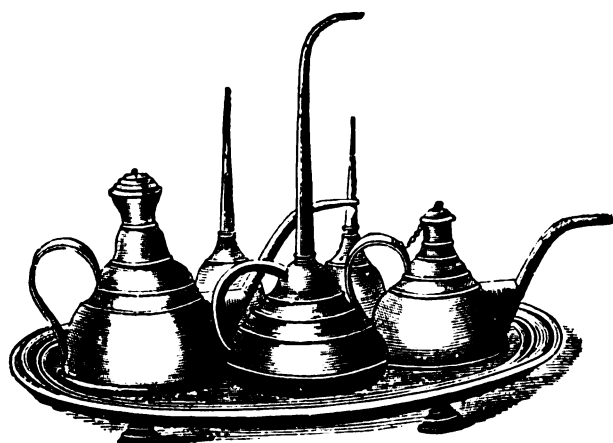


Fig. 731.

	BRASS.	NICKEL.
No. 20, Oval Tray, 3 Oilers, 2 Cans.....each,	\$12.00	14.00
" 21, " " 2 " 1 " .....	9.00	10.50
" 22, Oblong Tray, 2 " 1 " .....	8.00	9.50

OILER SET, No. 23.

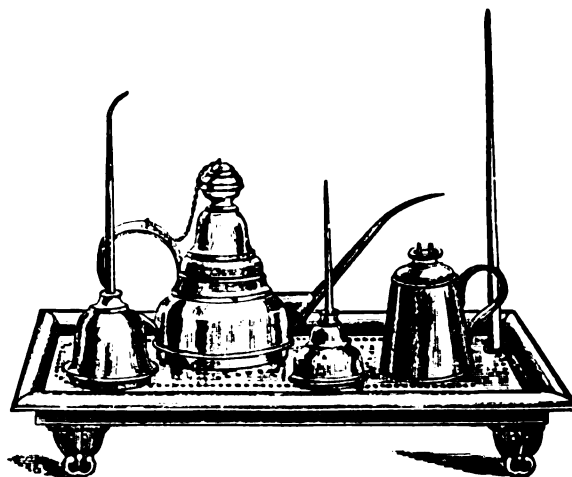


Fig. 732.

	BRASS.	NICKEL.
No. 23, Square Tray, 2 Oilers, 1 Can, 1 Lamp.....each,	\$14.00	15.75
" 24, " " 2 " 1 " .....	12.00	13.50
" 25, " " 3 " 2 " .....	16.00	18.00

OILER SET, No. 27.

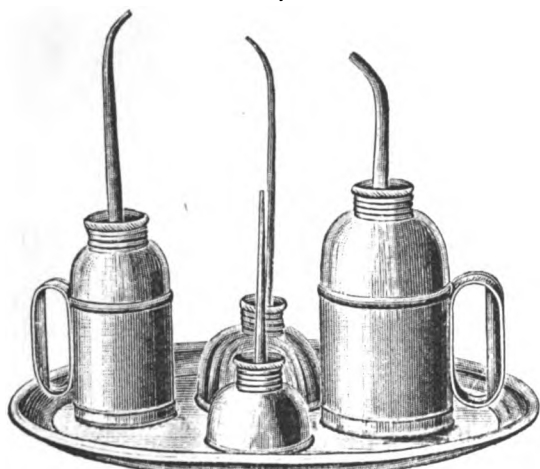


Fig. 733.

No. 26, 3 Pieces and Tray, Brass, each,	\$6.00
" 27, 5 " " " " " " " " " "	9.00
" 28, 5 " " " " " " " " " "	3.00

OILER SET, No. 33.



Fig. 736.

	BRASS.	NICKEL.
No. 33, Oval Flat Tray, 3 Oilers, 1 Filler, 1 Lamp, each,	\$7.00	12.00
" 34, " " " 2 " 1 " 1 " " " " "	6.00	10.00

1 qt. Oil Fillers.....each,	\$1.50
1 pt. " .....	1.25

Prices of Parts of Oiler Sets. Figs. 731, 732, 735, 736 and 737.		
Fancy Oilers, Handled .....	each,	\$1.00
Large " .....	"	.60
Medium Oilers.....each,		\$0.55
Small " .....	"	.50

OILER SET, No. 31.

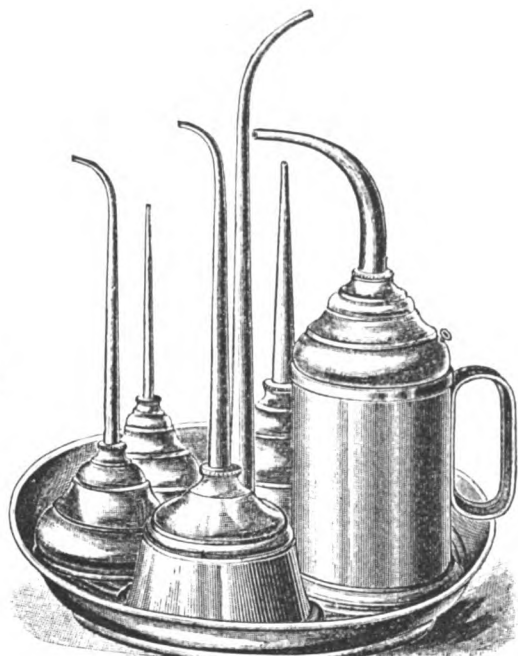


Fig. 734.

	BRASS.	NICKEL.
No. 30, 10 in. Tray, 4 Oilers, each,	\$7.00	10.00
" 31, 12 " " 5 " " " " " " "	9.00	12.00
" 32, 12 " " 5 " " " " " " "	5.00	

OILER SET, No. 29.



Fig. 735.

No. 29, Oval Tray, 2 Oilers, 1 Can, 1 Lamp,	Brass, each, \$10.00.	Nickel, each, \$11.75
---	-----------------------	-----------------------

OILER SET, No. 35.

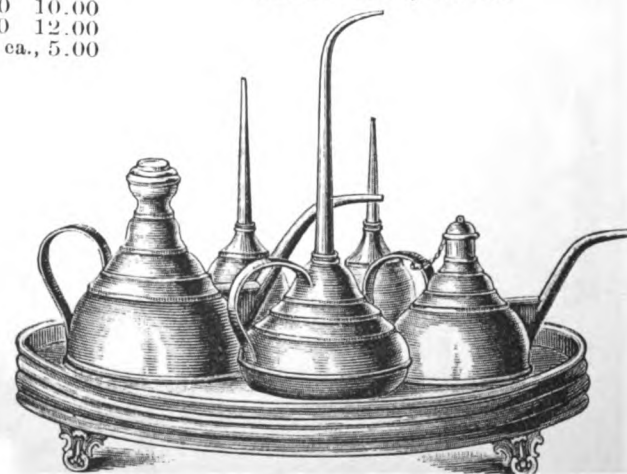


Fig. 737.

	BRASS.	NICKEL.
No. 35, Oblong Tray, 3 Oilers, 2 Cans.....each,	\$11.00	13.00

Long Spouts.....each,	\$0.20
Hand Lamps.....	.50

**ZINC OIL FILLER  
FOR ENGINEERS.**



Fig. 738.

1	gill.....	per dozen, \$3.00
1 $\frac{1}{2}$	pint.....	" 3.50
1	".....	" 4.00
1 $\frac{1}{2}$	".....	" 5.00
1	quart.....	" 6.00

**BRASS GREASE CUP.**



Fig. 739.

1 $\frac{1}{2}$	pint.....	per dozen, \$9.00
1	".....	" 12.00
2	".....	" 18.00

**BRASS OR COPPER OIL FILLER  
FOR ENGINEERS.**



Fig. 740.

1	pint.....	per dozen, \$12.00
1 $\frac{1}{2}$	".....	" 18.00
1	quart.....	" 21.00
1	pint, with long spout	" 15.00
1	quart, " " "	" 24.00

**COTTON WASTE BASKET. LOCOMOTIVE TORCH.**

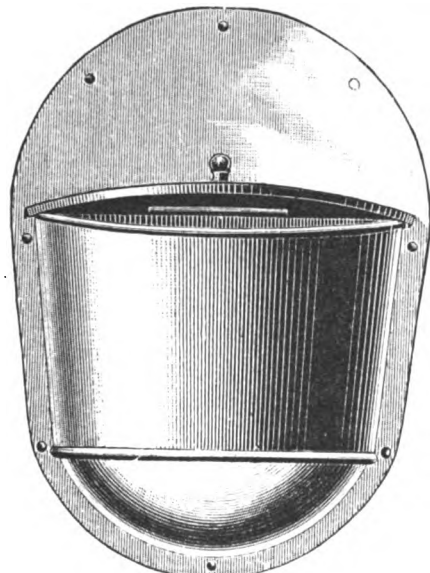


Fig. 741.

Nos	Inside Measurement	Brass. Each.	Nickel. Each.
1	5 $\frac{3}{4}$ x3 x5 $\frac{1}{2}$ ins.	\$2.00	2.50
2	6 $\frac{3}{4}$ x3 x5 $\frac{1}{2}$ "	2.75	3.25
3	7 x3 $\frac{1}{2}$ x7 "	3.50	4.25

**LOCOMOTIVE TORCH.**

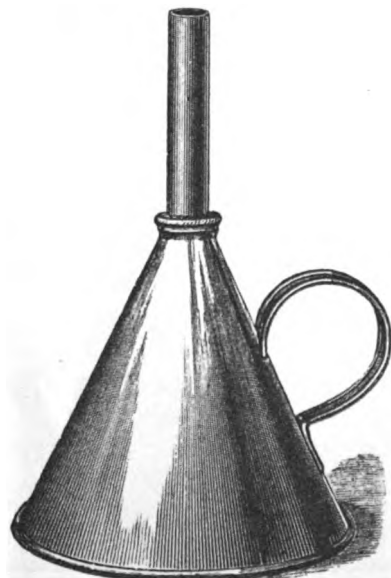


Fig. 746.

**Prices, Locomotive Torches.**

Fig. 744.

Capacity, 1 pint; total length, 13 ins.	
Long Hand Torch, Tin, per doz.	\$10.00
" " Brass " "	12.00

**Prices, Locomotive Torches.**

Fig. 746.

Capacity, 1 quart, with handle.	
Broad Bottom, Tin, per doz.,	\$12.00
" Brass " "	18.00

**EXTRA  
HEAVY  
LOCOMOTIVE  
TORCH.**

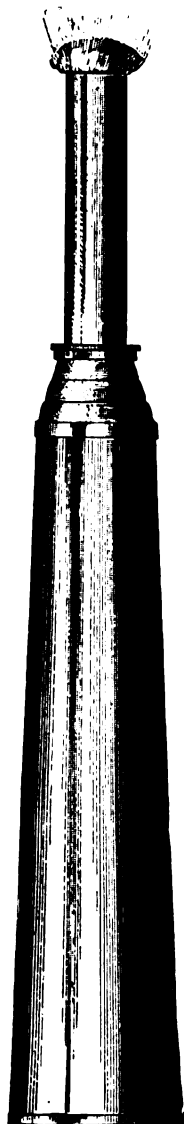


Fig. 744.

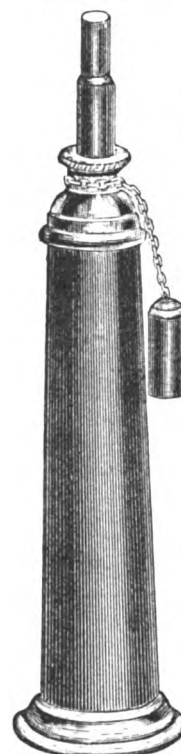


Fig. 745.

**Prices, Locomotive Torches.**

Fig. 745.

Capacity, 1 pint; total length, 13 ins.	
Extra heavy, Tin, per doz.,	\$18.00
" Brass, " "	24.00

**Prices, Plumbers' Torches.**

Fig. 747.

To be used with alcohol.	
Tin, per doz.,	\$12.00
Brass, " "	18.00

**TALLOW CAN.**



Fig. 742.

	Brass or Copper.	Tin.
1 quart.....	per dozen, \$18.00	9.00
2 ".....	" 24.00	12.00
3 ".....	" 30.00	18.00
4 " with bail.....	" 42.00	24.00

**GAUGE COCK DRIP.**

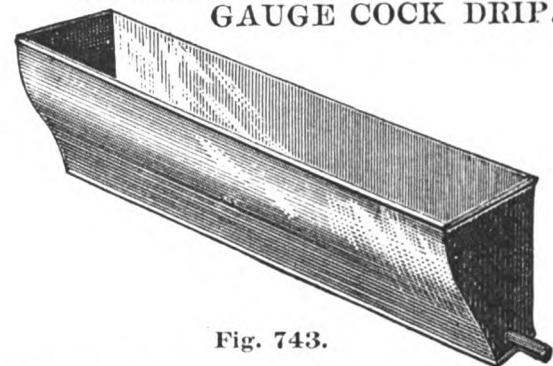


Fig. 743.

No. 1, Flat back, ogee front.....	per dozen, \$24.00
No. 2, Ogee front and back.....	" 36.00
Nickel Plating extra, each,	\$0.75.
Gauge Cock Drips made right or left hand.	

**PLUMBERS' TORCH.**

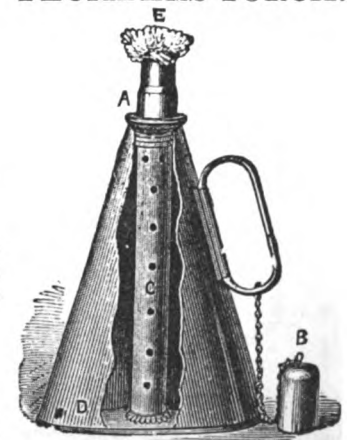


Fig. 747.



## ENGINEERS' HAND LAMP.



Fig. 748.

Nos.	Capacity.	Brass.	Zinc.	Tin.
1	1/2 pint. pr. doz.	\$6.00	5.00	4.00
2	1 " "	10.00	8.00	7.00

MINERS' HAT LAMP.  
Screw Top.Fig. 751.  
Per gross \$18.00  
BRAZING LAMP.Fig. 758.  
Self-Acting, for Jewelers,  
Dentists, Brass Finishers,  
Plumbers and Painters.  
Nos. .... 1 2 3  
Per doz. \$25.00 30.00 35.00VAPOR LIGHTING TORCHES.  
WALL TORCH.Fig. 763.  
Torches complete, Fig. 763.....  
" " " " 764.....  
Burners only, Fig. 760.....

This torch furnishes a light unsurpassed for rolling mills, foundries, engine rooms, etc.; 14 jets of light 3 to 6 ins. long. It has no wicks, no chimneys and will not blow out. Use high test water white oil or crude and refined petroleum.

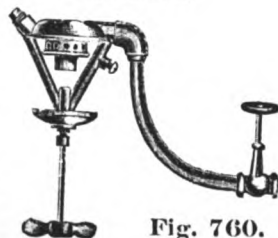


Fig. 760.

## HAND TORCH.



Fig. 764.

Torches complete, Fig. 763.....	per dozen, \$36.00
" " " " 764.....	" 54.00
Burners only, Fig. 760.....	" 24.00

LAMPS AND TORCHES.  
DEVERALL'S HAND LAMP.

Fig. 749.

Spout is reversible. Long End for kerosene, short for lard.

Nos.	Capacity.	Brass.	Zinc.	Tin.
1	1/2 pint. pr. doz.	\$6.00	5.00	4.00
2	1 " "	10.00	8.00	7.00

## DAVY MINERS' SAFETY LAMPS.



Fig. 752.



Fig. 753.

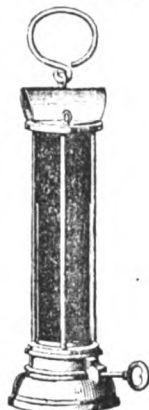


Fig. 754.



Fig. 755.

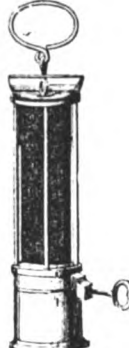


Fig. 756.

## Price, Each.

Spirits or Coal Oil.	Universal Clanny.	Newcastle Davy.	Stephenson.	Fireman.
\$3.10	2.90	2.20	3.25	2.20
No. 17, Williamson's Improved Double Safety.....	each, \$4.80			

## CLANNY SURVEYING LAMPS.

Brass and Copper.....	Full Size.	Medium.	Small.
Nickel Silver.....	each, \$4.75	4.50	4.25
Extra Glasses, Gauges and Brushes on hand, also English Brattice Cloth for ventilation of mines.	6.00	5.75	5.50

WROUGHT IRON BRAZED LAMPS AND TORCHES.  
TORCH LAMP.

Fig. 761.

1/2 pt. capacity, per doz., \$ 7.00  
1 " " " " " " " " 10.00

## ONE SPOUT TORCH.



Fig. 765.

Capacity.	Per doz.
1/2 gallon, one spout.....	\$13.00
1 " " two " ".....	14.00

For mills, foundries, furnaces, tunnels, etc. These goods are made of wrought iron, brazed together with spelter, and will stand a heat of 1700 degrees without melting.



Fig. 762.

1 pt. capacity, per doz., \$10.00  
1 qt. " " " " " " " " 11.00

## TWO SPOUT TORCH.



Fig. 766.

Capacity.	Per doz.
1 gallon, three spout.....	\$18.00
1 " " four " ".....	19.00

## LAMPS.

TUBULAR HAND LAMP.

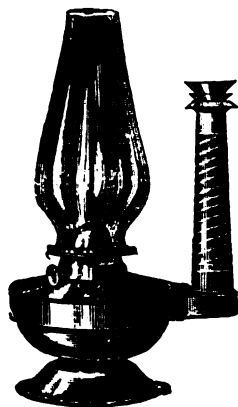


Fig. 767.

No. 1.....per doz., \$7.25  
No. 2, with reflector " 9.69

LOCOMOTIVE CAB AND GAUGE LAMPS.

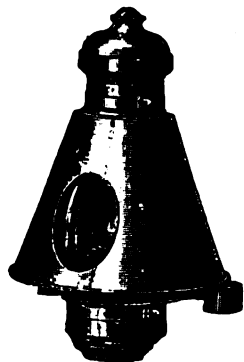


Fig. 769.



Fig. 770.

STUDENT LAMP.

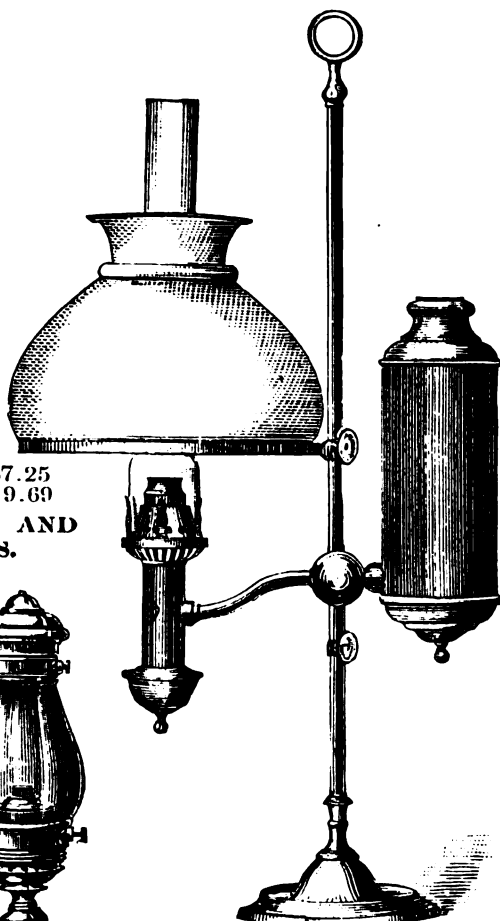


Fig. 771.

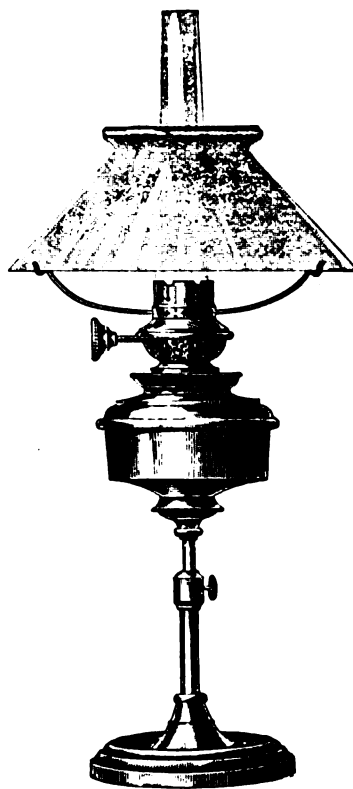
CENTER EXTENSION  
TABLE OR HAND LAMP.

Fig. 772.

TUBULAR SOCKET LAMP.

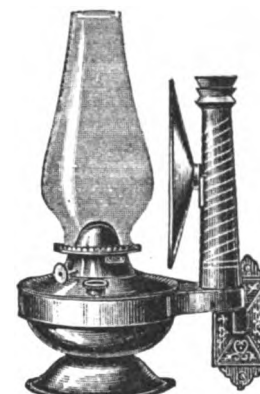


Fig. 768.

No. 1.....per dozen, \$9.25  
No. 2....." 12.94

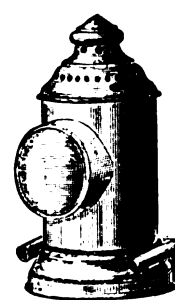
LOCOMOTIVE CAB AND  
GAUGE LAMPS.

Fig. 773.



Fig. 774.

Prices, Fig. 774.

Brass...pr.doz.\$45.00  
Nickel " 50.25

Brass...pr.doz.\$36.00  
Nickel " 48.00

Brass.....per dozen, \$45.00  
Nickel....." 48.00

Brass.....per dozen, \$60.00  
Nickel....." 60.00

Brass.....per dozen, \$45.00  
Nickel....." 50.25

Prices, Fig. 770, without Top.

Brass.....per dozen, \$30.00  
Nickel....." 42.00

Prices, Double Student Lamps.

Brass.....per dozen, \$84.00  
Nickel....." 96.00

Prices, Fig. 773.

2 Bull's Eyes.....per dozen, \$56.00  
1 " " " 33.00

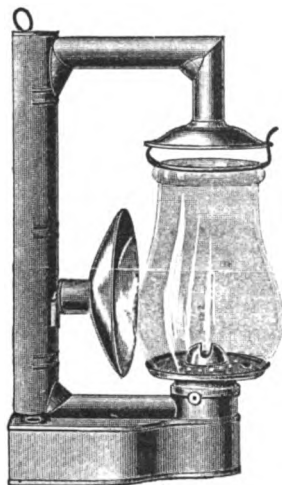
TUBULAR SIDE OR  
WALL LAMP.

Fig. 775.

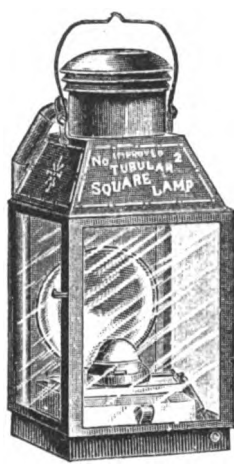
TUBULAR SQUARE  
STATION LAMP.

Fig. 776.

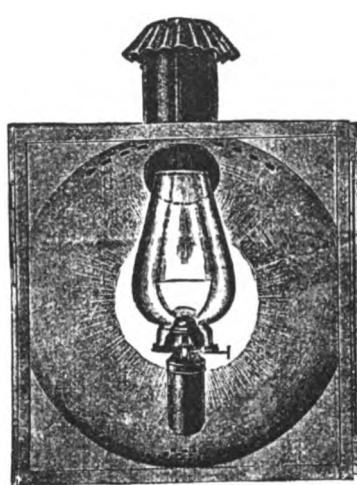
HEAD LIGHT  
STATION LAMP.

Fig. 777.

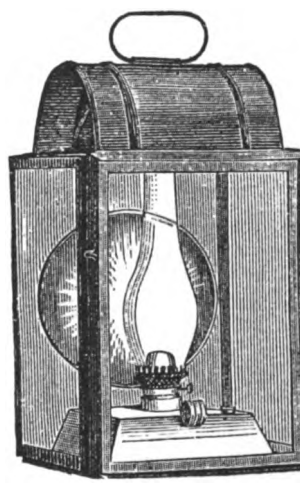
BOW TOP  
STATION LAMP.

Fig. 778.

TRIANGLE  
STATION LAMP.

Fig. 779.

Prices, Fig. 775.

No. 15, with 5 inch Reflector.....per dozen, \$12.00  
" 17, " 6 " " 11.00

Prices, Fig. 777.

Size, inches.....11x13  
Per dozen.....\$36.00

Prices, Fig. 778.

Sizes, inches, 7x11 8x12 9x13 12x14  
Per dozen...\$14.00 16.00 18.50 24.50

Prices, Fig. 779.

8x12 9x13 10x14 12x16  
10.00 19.00 21.00 24.00

Prices, Tubular Square Lamps, Fig. 776.

No. 0, with Corrugated Reflector.....each, \$2.67  
" 1, " 6 inch Silver Glass Reflector....." 3.00  
" 2, " 7 " " " 4.30  
" 3, " 12 " " " 8.00  
Any of above Lamps Guarded.....extra, .50

Prices, Tubular Square Bridge or Signal Lamps.

Style Fig. 776, with any colored lights (sheet glass) desired.

No. 2, 7 in. Reflector, Ruby, Green or Blue Glass, front and sides.....each, \$5.00  
" 2, 7 " " 2 Ruby and 2 Green or Blue Glasses, four sides....." 5.40  
" 3, 12 in. " Ruby, Green or Blue Glass, front and sides....." 11.40  
" 3, 12 " " 2 Ruby and 2 Green or Blue Glasses, four sides....." 12.00

These Lamps will endure the roughest winds and storms, and not smoke or blow out. They are strong and symmetrical, the tubes rendering them firm and durable beyond other lamps.

These Lamps are furnished with very powerful kerosene burners. The body of the lamp is made of galvanized iron, strong and durable, with extra heavy bails, and with rings in the bottom to attach the lamp to the guy rope.

## SWITCH, TARGET AND SIGNAL LAMPS.

**TUBULAR SWITCH  
TARGET LAMP.**  
4 Inch Lenses.

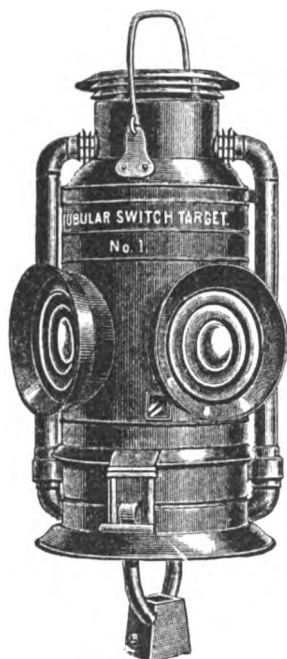


Fig. 780.

**SWITCH TARGET  
LAMP.**  
4 Inch Corrugated Lenses.  
Malleable Iron Fork.

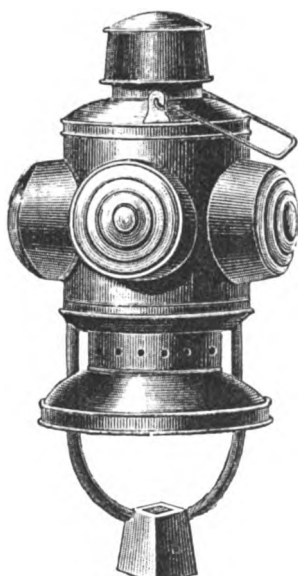


Fig. 781.

**SWITCH TARGET  
LAMP.**  
4 Inch Corrugated Lenses.

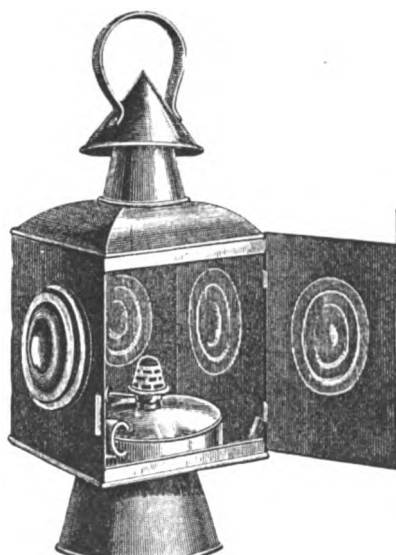


Fig. 782.

**SWITCH TARGET LAMP.**  
6 Inch Semaphore Lenses.

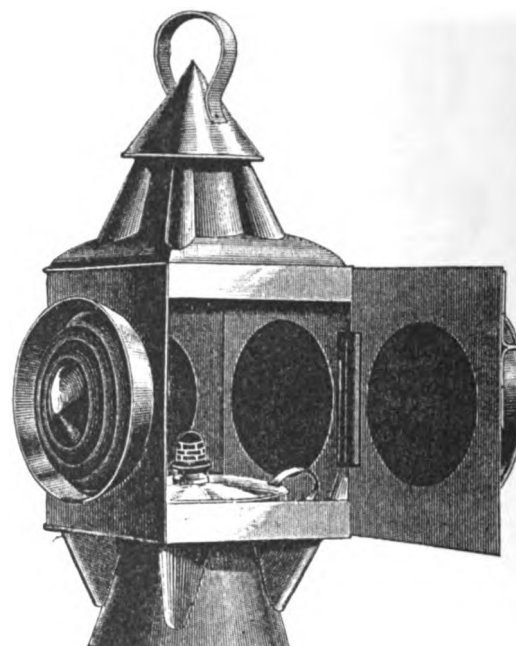


Fig. 783.

### Price and Description, Fig. 780.

Burns kerosene oil, never freezes, cannot be opened while in place, and no chimney required. A perfect working Switch Target Lamp has at last been secured by applying the well known tubular principle to this purpose. It cannot be blown out in the hardest storm, and is so arranged on springs that the jar of passing trains does not disturb the flame. Always self-locked when in place.

No. 1, any colored lenses.....per dozen, \$66.00

### Price, Fig. 782.

With White, Ruby, Green or Blue Lenses.....per dozen, \$60.00

### Price and Description, Fig. 781.

The fork is arranged to fit over top of target rod, and is fastened to same with a set screw. The lamp is made with sockets, permitting of the passing of the fork up through to its position, and the flame is protected from the jar of the passing trains by the placing of spiral springs in the sockets between the top of the fork and the lamp.

With any colored lenses.....per dozen, \$60.00

### Price, Fig. 783.

With White, Ruby, Green or Blue Lenses.....per dozen, \$80.00

**FRESNEL  
TUBULAR POLE  
TARGET LAMP.**

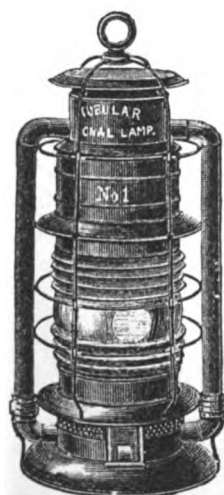


Fig. 784.

**FRESNEL POLE  
TARGET LAMP.**

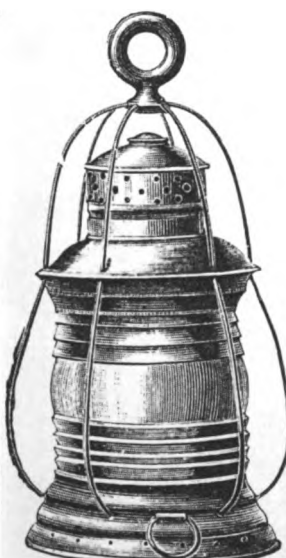


Fig. 785.

**REAR SIGNAL  
LAMP.**

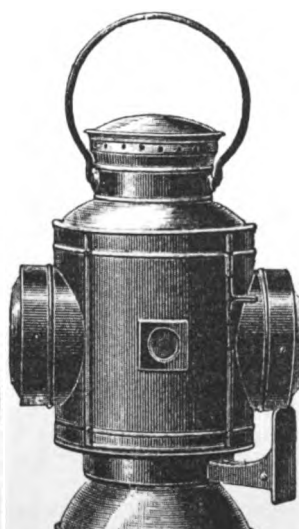


Fig. 786.

**BLIZZARD OR REAR  
SIGNAL LAMP.**

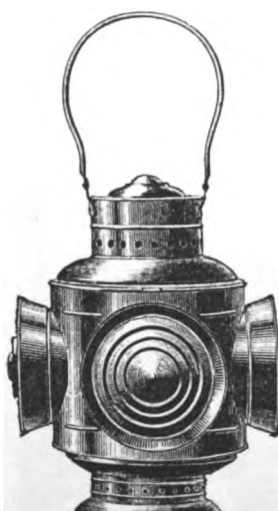


Fig. 787.

**CABOOSE SIGNAL LAMP.**  
(Inside View.)

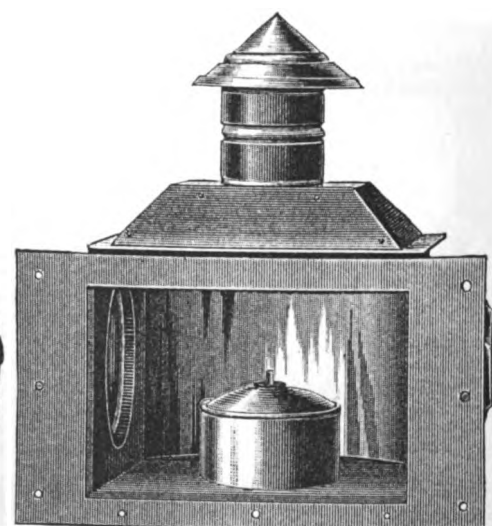


Fig. 788.

### Prices and Description, Fig. 784.

This Lamp is made on the same principle as the celebrated Tubular Lantern, thereby giving a very strong, bright flame. Heavy winds do not affect the burning of this lamp.

With 6 inch White Fresnel.....each, \$8.50  
" 6 " Green or Blue Fresnel....." 9.50  
" 6 " Ruby Fresnel....." 10.00

### Prices, Fig. 785.

With 6 inch White Fresnel.....each, \$6.25  
" 6 " Green or Blue Fresnel....." 7.50  
" 6 " Ruby Fresnel....." 8.75

### Price and Description, Fig. 786.

This Lamp is intended for use on rear of passenger trains, one on each side or corner of the car (two to each train—right and left). With 4 inch corrugated lenses.

Any colored lense.....per dozen, \$18.00

### Price and Description, Fig. 787.

This Lamp is intended for use on rear of passenger trains and front of locomotives. With 4 inch Semaphore lense.

Any colored lense.....per dozen, \$18.00

### Price and Description, Fig. 788.

This Lamp is intended for use on Caboose Cars for freight trains. It is so arranged that the light is reflected down from the elevated deck or look out into the car, and at the same time lighting the signals with a strong full light. With 6 inch Semaphore lense. Body of lamp galvanized iron.

With Ruby Semaphores.....per dozen, \$18.00



## RAILROAD LAMPS AND HEAD LIGHTS.

DOUBLE LENSE TAIL LAMP. 8 Inch Bull's Eye Lenses. SINGLE LENSE TAIL LAMP. 8 Inch Semaphore Lens. SINGLE LENSE TAIL LAMP. 8 Inch Bull's Eye Lense. TRICOLORED INSPECTOR'S LAMP.

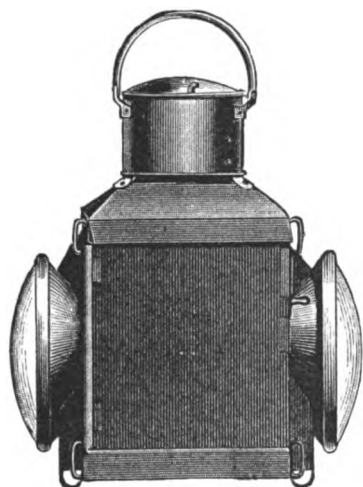


Fig. 789.

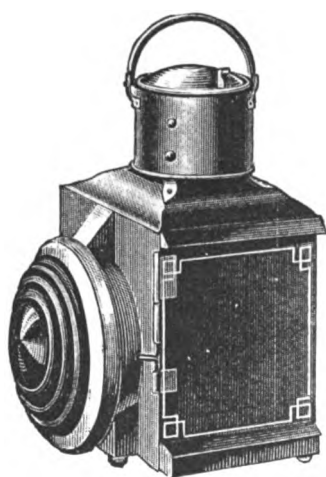


Fig. 790.

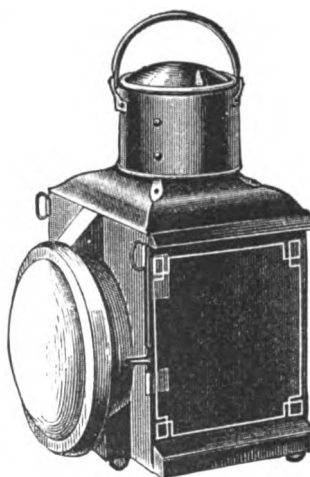


Fig. 791.

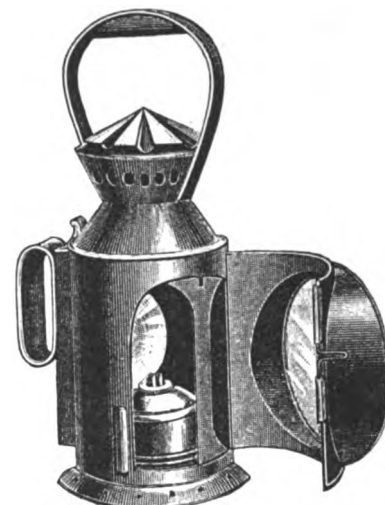


Fig. 792.

## Prices, Fig. 789.

With 8 inch Bull's Eyes, White	each, \$15.00
" 8 " " Ruby	" 17.50
" 8 " " Blue, Green or Yellow	" 16.25
" 8 " " White and Ruby	" 16.25
" 8 " " { White or Blue	" 15.63
" 8 " " { Green or Yellow	" 13.75
" 8 " Semaphores, White	" 16.25
" 8 " " Ruby	" 16.25
" 8 " " Blue, Green or Yellow	" 15.00
" 8 " " White and Ruby	" 15.00
" 8 " " { White or Blue	" 14.38
" 8 " " { Green or Yellow	" 14.38

## Prices, Fig. 790.

With 8 inch Semaphore, White	each, \$8.75
" 8 " " Blue or Green	" 9.38
" 8 " " Ruby	" 10.00

## Prices, Fig. 791.

With 8 inch Bull's Eye, White	each, \$10.00
" 8 " " Blue or Green	" 10.63
" 8 " " Ruby	" 11.25

## Price, Fig. 792.

With 4 inch Reflector.

Red, Green or White Light	per dozen, \$45.00
---------------------------	--------------------

## LOCOMOTIVE HEAD LIGHTS.

ORNAMENTED CASE SIGNAL HEAD LIGHT.

ROUND HEAD LIGHT.

ORNAMENTED CASE HEAD LIGHT.

For Narrow Gauge Locomotives,  
Yard Engines and Rear of  
Tenders.

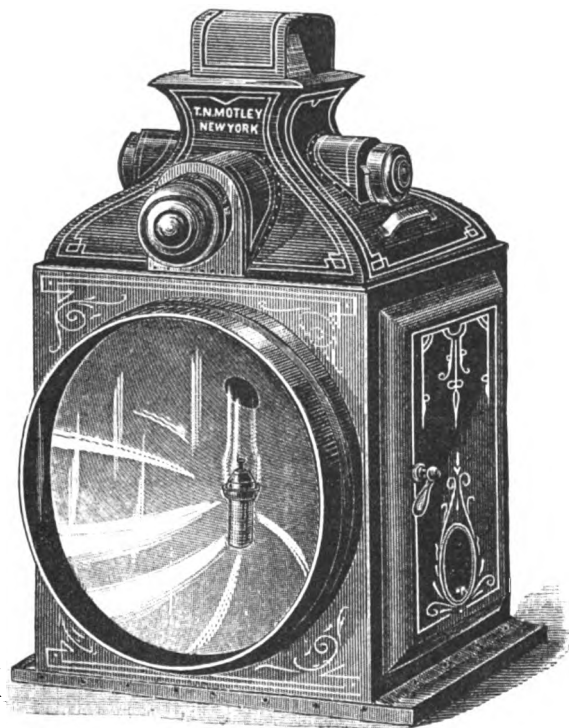


Fig. 793.

For displaying at night any colored signal that may be desired. Takes the place of signal lanterns. Perfect in its operation.

## Prices, Fig. 793.

23 inches, ornamented case, with signals in top	each \$70.00
20 " " " " " " " "	" 65.00
18 " " " " " " " "	" 60.00
16 " " " " " " " "	" 55.00

## Prices, Fig. 793, with Numbers in Sides.

23 inches, ornamented case, with signals in top and numbers in sides	each, \$75.00
20 " " " " " " " "	" 70.00
18 " " " " " " " "	" 65.00
16 " " " " " " " "	" 60.00

## Prices, Fig. 793, without Top Signals, but with Numbers in Sides.

23 inches, ornamented case, with numbers only in sides	each, \$65.00
20 " " " " " " " "	" 60.00
18 " " " " " " " "	" 55.00
16 " " " " " " " "	" 50.00

Head Lights painted plain, one coat of black only, \$2.00 each less than when ornamented.



Fig. 794.

## ORNAMENTED CASE.

16 inch	each, \$45.00
14 " "	" 35.00

Head Lights painted plain, one coat of black only, \$2.00 each less than when ornamented

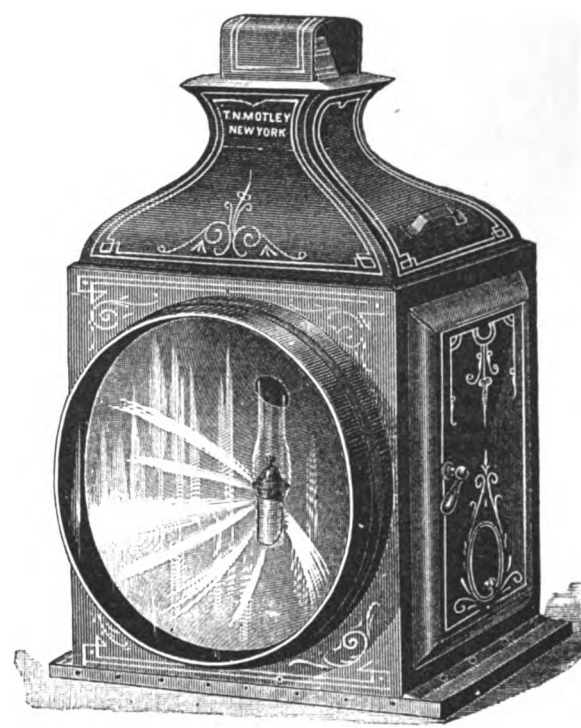


Fig. 795.

## Prices, Fig. 795.

23 inches, ornamented case	each, \$60.00
20 " " " "	" 55.00
18 " " " "	" 50.00
16 " " " "	" 45.00

Head Lights painted plain, one coat of black only, \$2.00 each less than when ornamented.

## Prices, Head Light Reflectors.

Diameter.	Finished and Plated.	Not Plated.
23 inches	each, \$25.00	18.00
20 " "	" 23.00	16.00
18 " "	" 20.00	15.00
16 " "	" 18.00	14.00
14 " "	" 14.00	12.00

## Prices, Head Light Cases.

23 inches, square, ornamented	each, \$25.00
20 " " " "	" 23.00
18 " " " "	" 20.00
16 " " " "	" 18.00
14 " " " "	" 16.00

Cases painted plain, one coat of black only, \$2.00 each less than when ornamented.

## U. S. L. H. E.

## REGULAR.

## TUBULAR LANTERNS.

## TIN TUBULAR LANTERNS.

## Price, Fig. 796.

No. 0, with guards ..... per dozen, \$7.77

## Prices, Fig. 797.

With Safety Lift Wire Attachment.

No. U. S., with guards ..... per dozen, \$7.35

" 1, " ..... " 9.00

" 2, " ..... " 13.00

Above Lanterns without guards 25 cents per dozen less.

## BRASS AND NICKEL PLATED TUBULAR LANTERNS.

Without Guards.

## Price, Fig. 796.

No. U. S., Brass ..... per dozen, \$8.00

## Prices, Fig. 797.

No. U. S., Brass ..... per dozen, \$9.35

" U. S., Nickel Plated ..... " 13.35

" 0, Brass ..... " 22.75

" 0, Nickel Plated ..... " 30.75

## GUARDS FOR BRASS LANTERNS.

Brass.

No. U. S. per doz., \$0.80

0 ..... 1.33

Nickel Plated.

No. U. S. per doz., \$1.33

0 ..... 2.00

## SAFETY.

## HOOD REFLECTOR.

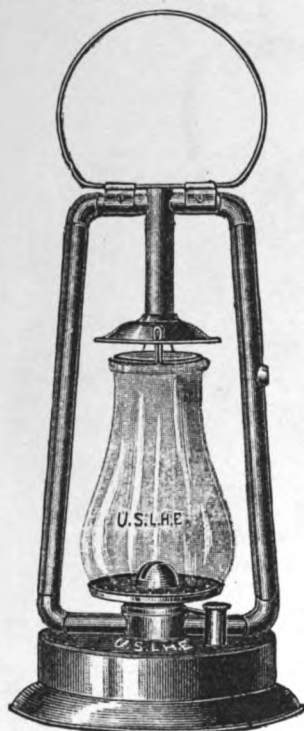


Fig. 798.

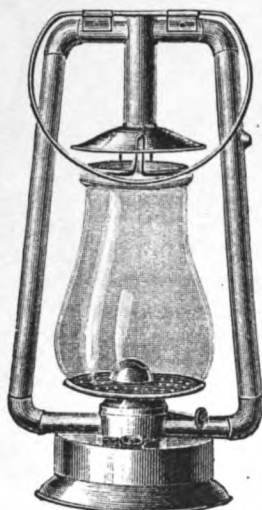


Fig. 796.

## U. S. L. H. E. TUBULAR LANTERNS.

## Fig. 798.

With White Globes, complete ..... per dozen, \$16.00

With Ruby " ..... " 24.00

With Green or Blue Globes, complete. " 21.33

Engraving Globes ..... .67

Tubular New York Fire Department Lanterns, with guards, with heavy tin oil pots. .... per dozen, \$21.00

With heavy copper oil pots. .... 30.00

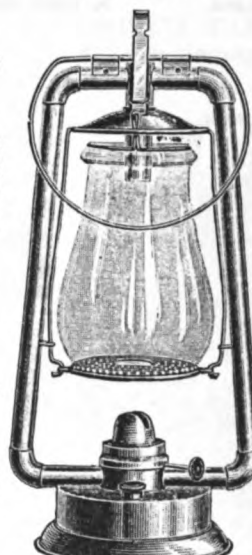


Fig. 797.

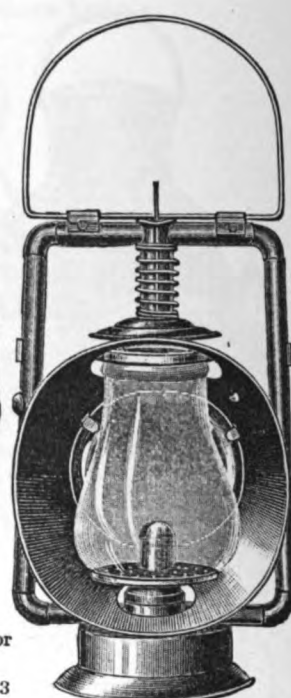


Fig. 799.

## TUBULAR HOOD REFLECTOR LANTERNS, Fig. 799.

For track walkers and to fasten on dash board for

night driving.

Complete with dash board fastening and 5 in. S. G.

Reflector ..... per dozen, \$13.33

Complete with dash board fastening and 5 in. S. G. Reflector ..... per dozen, \$21.00

Complete with dash board fastening and 5 in. S. G. Reflector ..... 30.00

## FIRE DEPT.

## ENGINE SIGNAL.

## No. 2 MONITOR.

## RAILROAD LANTERNS.

## No. 3 MONITOR.

## No. 39.

## No. 12 GIANT.



Fig. 800.

KEROSENE BURNER.  
Each.  
Brass ..... \$6.00  
Nickel Plated ..... 9.00  
Silver ..... 11.00  
Candlestick Holders.  
Extra ..... each, \$0.50



Fig. 801.

TIN JAPANED.  
Burns Lard Oil.

Per doz.  
White Globes ..... \$7.00  
Ruby " ..... 14.00  
Blue or Green Globes ..... 10.50  
Any style holder.

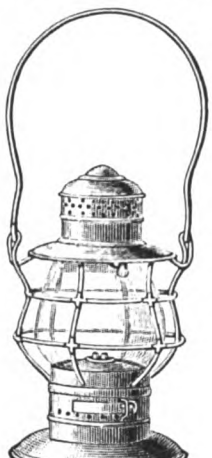


Fig. 802.

BAYONET CATCH-TIN.

Per doz.  
White Globes ..... \$8.75  
Ruby " ..... 15.00  
Blue or Green Globes ..... 12.50  
No. 2 Lantern-Brass.  
Price ..... each, \$3.00

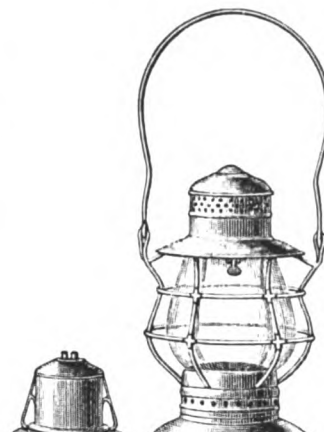


Fig. 803.

SANGSTER SPRING-TIN.

Per doz.  
White Globes ..... \$8.50  
Ruby " ..... 14.75  
Blue or Green Globes ..... 12.25  
No. 3 Lantern-Brass.  
Price ..... each, \$2.75

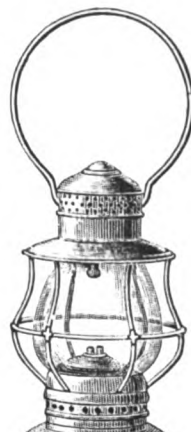


Fig. 804.

SANGSTER SPRING-TIN.

Per doz.  
White Globes ..... \$8.00  
Ruby " ..... 14.25  
Blue or Green Globes ..... 11.75  
With Bayonet Catch.  
Extra ..... per doz., \$0.25

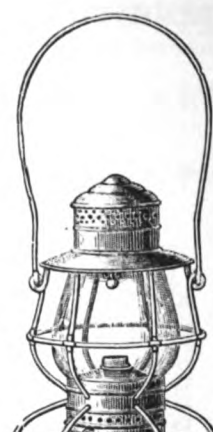


Fig. 805.

BAYONET CATCH-TIN.

Per doz.  
White Globes ..... \$10.25  
Ruby " ..... 16.50  
Blue or Green Globes ..... 14.00  
Above Lantern casts no shadow.

## CONDUCTORS' GEM.

## LANTERNS. RAILWAY QUEEN.

## No. 4.

## POLICE AND TRADE LANTERNS. BULL'S EYE. C. O. AND K.



Fig. 806.

Brass ..... each, \$2.50  
Nickel Plated ..... 4.50



Fig. 807.

Prices "Gem," Fig. 807.

Brass ..... each, \$6.00  
Nickel Plated ..... 9.00  
Silver ..... 11.00  
Prices, "Pet," Fig. 807, small  
Brass ..... each, \$5.00  
Nickel Plated ..... 8.00  
Silver ..... 10.00



Fig. 808.

Prices "R.R. Queen" Fig. 808.

Brass ..... each, \$5.50  
Nickel Plated ..... 8.50  
Silver ..... 10.50



Fig. 809.

Prices "No. 4," Fig. 809.

Brass ..... each, \$4.00  
Nickel Plated ..... 5.50  
Silver ..... 7.50



Fig. 810.

TIN.

2 3/4 inches ..... per dozen, \$4.50  
3 " ..... 5.00  
3 1/4 " ..... 7.50

BRASS.

3 inches ..... per dozen, \$24.00



Fig. 811.

Single Guard ..... pr. doz., \$5.00  
Double " ..... 5.50



**MARINE AND CAR LAMPS AND LANTERNS.**  
 Mast Head Light. Port and Starboard Port and Starboard Port and Starboard  
 Fresnel Globe. Marine Lamp. Marine Lamp. Lantern.

Mast Head Lantern.

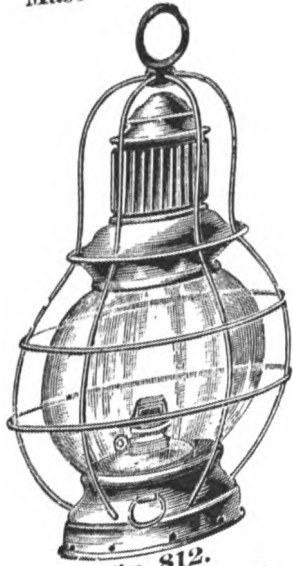


Fig. 812.  
Port and Starboard  
Side Light.

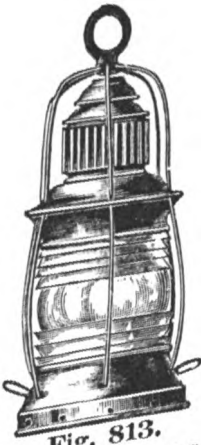


Fig. 813.  
Port and Starboard  
Side Light.

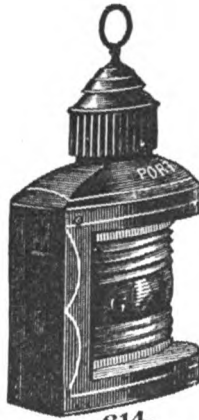


Fig. 814.  
Port and  
Side



Fig. 815.  
Starboard  
Light.



Fig. 816.  
Brass Bow Light  
For Steamer.

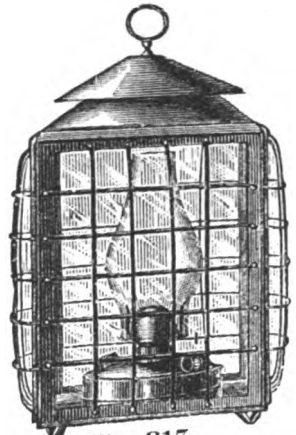


Fig. 817.  
Port and Starboard  
Side Light.

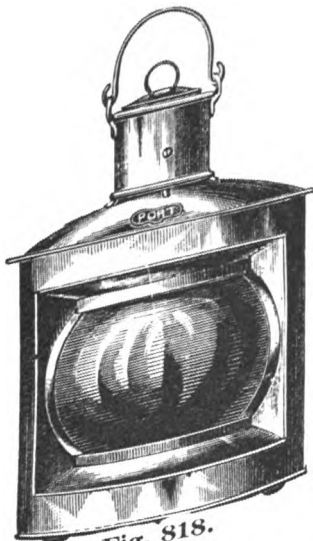


Fig. 818.  
Yacht Port  
and Starboard  
Side Light.

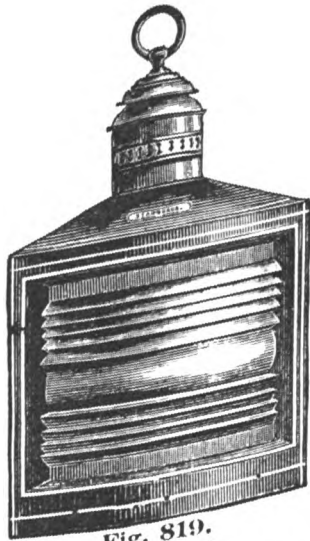


Fig. 819.  
Prices, Fig. 812.

Brass	.....	each, \$5.75
Galvanized	.....	3.75
Zinc	.....	3.50

Prices, Fig. 813.

Brass, 8 inch Globe	.....	each, \$12.00
Galv'd 8	.....	7.75
Zinc, 8	.....	7.25
Brass, 6	.....	5.75
Galv'd 6	.....	3.75
Zinc, 6	.....	3.50
Brass, 4 1/2	.....	4.00
Galv'd 4 1/2	.....	2.50
Zinc, 4 1/2	.....	2.25

Prices, Fig. 814.

Brass, Glass 5x8	.....	per pair \$13.00
Tin, " 5x8	.....	7.00

Prices, Fig. 815.

Galvanized, Glass 4 3/4 x 5 1/2	.....	pair, \$4.25
Tin, " 4 3/4 x 5 1/2	.....	4.00

Price, Fig. 816.

Galvanized, Glass 5x8	.....	per pair, \$8.50
-----------------------	-------	------------------

Prices, Fig. 817.

Tin, Glass 9x13	.....	each, \$4.00
Tin, " 8x12	.....	3.20

Prices, Fig. 818.

Brass, Glass 7x10	.....	per pair, \$27.00
Galvanized, Glass 7x10	.....	17.00

Price, Fig. 819.

Tin, Glass 7x12	.....	per pair, \$16.50
-----------------	-------	-------------------



Fig. 820.  
Marine Lamp.

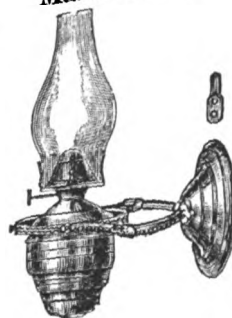


Fig. 824.  
Car Lamp.



Fig. 827.

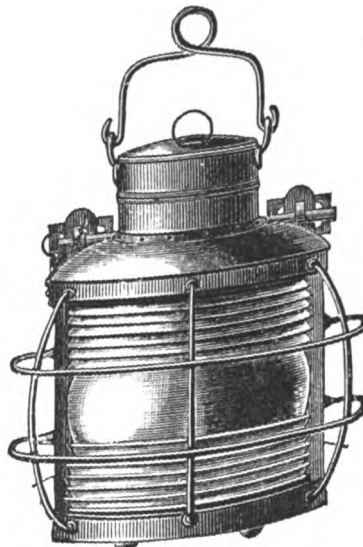


Fig. 821.  
Price, Fig. 820.

Brass, Glass 7x12	.....	per pair, \$40.00
-------------------	-------	-------------------

Price, Fig. 821.

Brass, Glass 9x20	.....	each, \$25.00
-------------------	-------	---------------

Prices, Fig. 822.

Galvanized, Glass 6 1/2 x 12	.....	pair, \$17.00
Tin, " 6 1/2 x 12	.....	16.00

Prices, Fig. 823.

Brass, Glass 3 1/2 x 5	.....	per pair, \$7.00
Tin, " 3 1/2 x 5	.....	3.50

Price, Fig. 824.

Brass	.....	each, \$2.00
-------	-------	--------------

Prices, Fig. 825.

Brass, Glass 4x6	.....	each, \$4.00
Tin, " 4x6	.....	2.25

Prices, Fig. 826.

Brass, Glass 4 1/2 x 6 1/2	.....	per pair, \$9.50
Tin, " 4 1/2 x 6 1/2	.....	5.75

Price, Fig. 827.

Brass	.....	each, \$5.00
-------	-------	--------------

Prices, Fig. 828.

Brass, No. 1 Glass, 6 1/2 x 12	.....	each, \$14.00
Galv'd No. 1 " 6 1/2 x 12	.....	10.00
Brass, No. 2 " 5x9	.....	7.00
Galv'd No. 2 " 5x9	.....	4.00
Tin, No. 2 " 5x9	.....	3.75
Brass, No. 3 " 5x6 3/4	.....	5.00
Galv'd No. 3 " 5x6 3/4	.....	3.00

Guards put on Side Lights without extra charge when so ordered.

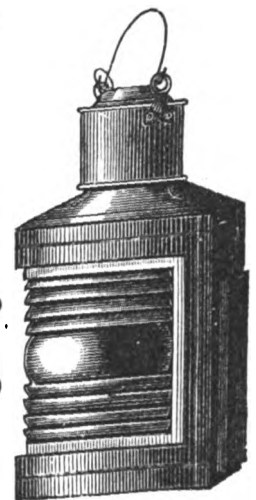


Fig. 822.  
Bowsprit or  
Head Light.

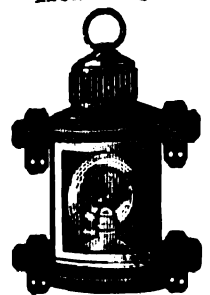


Fig. 825.

Bowsprit or  
Head Light.

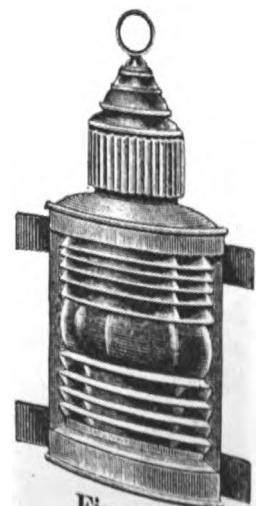


Fig. 828.

Fig. 823.

Port and  
Starboard  
Side Light.



Fig. 826.

## CAR LAMPS.

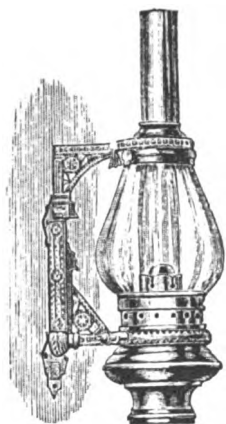
**SIDE LAMP**  
For Mineral Sperm Oil.

Fig. 820.

Fitted with adjustable globe and Argand or Dual Burner. Can be made to burn candles if desired.

Brass.....	each, \$	7.00
Real Bronze.....	"	7.50
Nickel Plated.....	"	9.00
Silver Plated.....	"	10.50

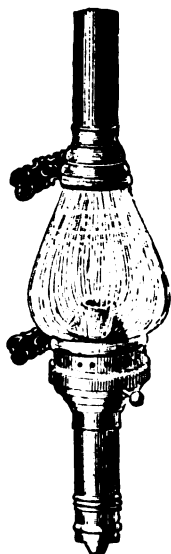
**SIDE LAMP**  
For Candles.

Fig. 830.

The globe of this lamp is plastered to the lamp trimmings.

Brass.....	each, \$	6.50
Real Bronze.....	"	7.50
Nickel Plated.....	"	8.50
Silver Plated.....	"	10.00

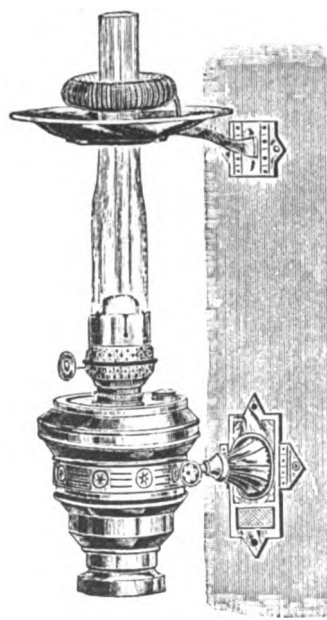
**SIDE LAMP**  
For Mineral Sperm Oil.

Fig. 831.

Fitted with reflector and chimney-holder combined, and Argand or Dual Burner.

Brass.....	each, \$	4.00
Real Bronze.....	"	4.25
Nickel Plated.....	"	5.00
Silver Plated.....	"	6.50

With smoke bell, add 50 cents each.

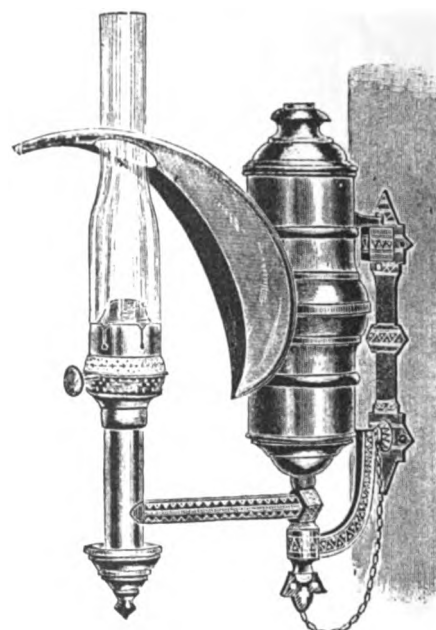
**POSTAL CAR LAMP.**

Fig. 832.

With central draught argand burner. Can be made to burn oil of any gravity, kerosene to lard oil.

Fount has standard fastening.

Brass.....each, \$7.50

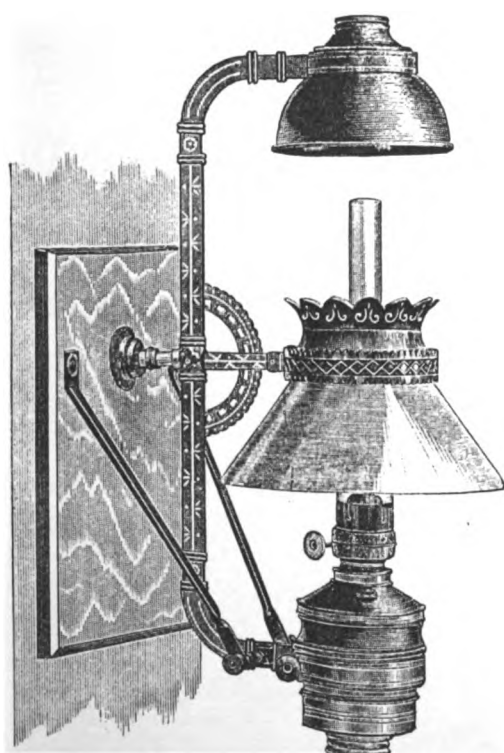
**SIDE DECK LAMP**  
For Mineral Sperm Oil.

Fig. 833.

Designed to be placed in the upper deck of the car, taking the place of a center lamp. Is supplied with Porcelain Shade, Metal Smoke Bell and Argand or Dual Burner.

Brass.....	each, \$	14.00
Real Bronze.....	"	15.00
Nickel Plated.....	"	16.00
Silver Plated.....	"	18.50

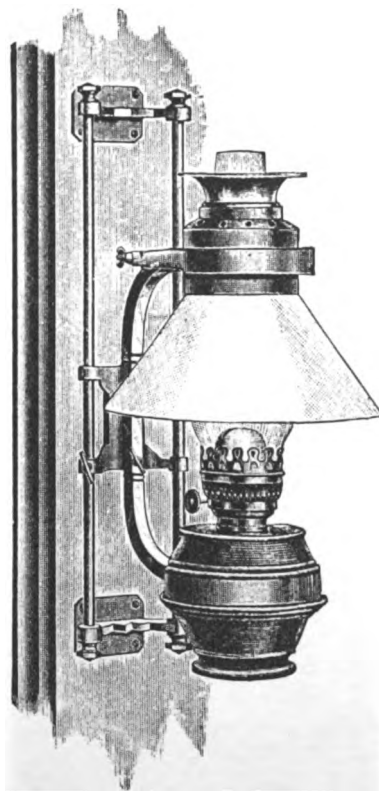
**SIDE LAMP.**  
With Sliding Bracket for Mineral Sperm Oil.

Fig. 834.

This Lamp is designed for private cars. The sliding bracket admits of the burner and fount being raised or lowered at pleasure. The lamp can be removed from the bracket plate and by having extra brackets can be moved from one part of the car to another.

Brass.....	each, \$	17.00
Real Bronze.....	"	18.00
Nickel Plated.....	"	19.00
Silver Plated.....	"	21.00

**SIDE LAMP.**  
For Mineral Sperm Oil.

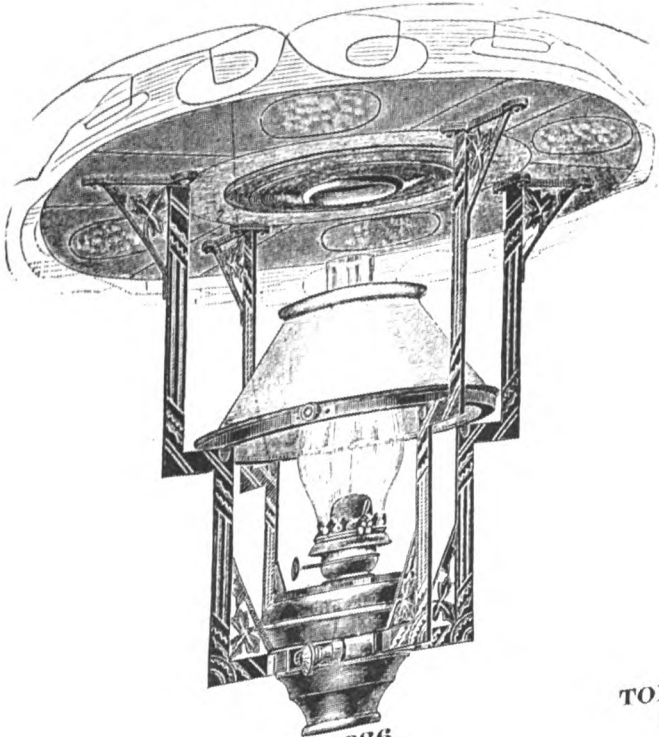
Fig. 835.

This Lamp has solid cast bracket but is made with detachable bracket and wall plate when desired. It is fitted with Dual Burner, Porcelain Shade, new screw adjustable shade holder, and improved cam movement fastening for holding the oil fount in place.

Brass.....	each, \$	9.00
Real Bronze.....	"	9.50
Nickel Plated.....	"	10.50
Silver Plated.....	"	13.00

CAR LAMPS AND CHANDELIERS.

**CENTER LAMP,  
For Mineral Sperm Oil.**



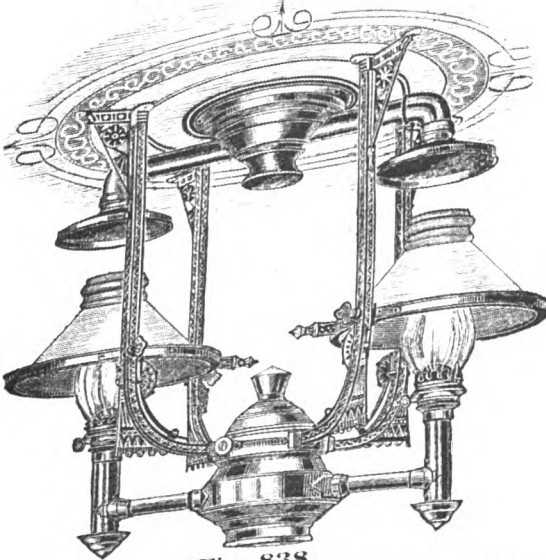
**Fig. 836.**

**Description and Prices.  
Fig. 836.**

Especially adapted for narrow gauge cars.  
Has solid cast brackets and split ring, Dual burner  
and porcelain shade. Standard drop, over all, 16½  
inches.

Brass.....	each, \$13.00
Real Bronze.....	" 14.00
Nickel Plated.....	" 15.50
Silver Plated.....	" 18.50

**CHANDELIER,  
For Mineral Sperm Oil.**

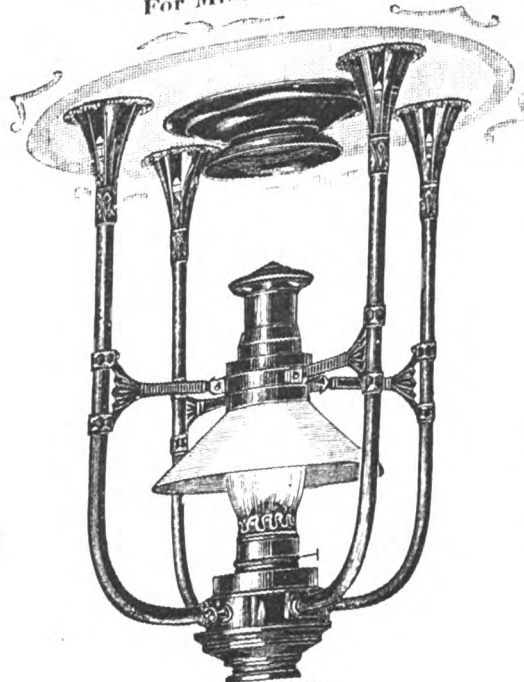


**Fig. 838.**

Improved pattern, furnished with either Argand  
or Dual burners and porcelain shades. Adapted to  
parlor, sleeping or dining cars.  
Standard drop over all, 24 inches.

Brass.....	each, \$26.00
Real Bronze.....	" 27.00
Nickel Plated.....	" 33.00
Silver Plated.....	" 34.00

**TORNADO CENTER LAMP,  
For Mineral Sperm Oil.**



**Fig. 839.**

This Lamp is constructed on the  
Tornado principle, and gives a steady and  
brilliant light.

Dual burners, porcelain shades.  
Standard drop over all, 23 inches.

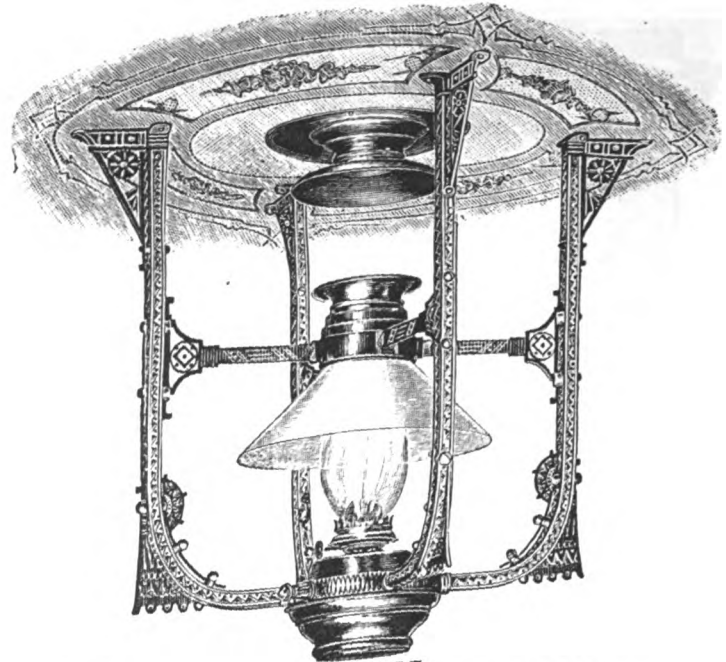
Brass.....	each, \$22.00
Real Bronze.....	" 22.50
Nickel Plated.....	" 25.50
Silver Plated.....	" 27.00

**TORNADO CHANDELIER.**

For officers' and parlor cars. Same as  
Fig. 840, but has four founts.  
For mineral sperm oil.

Brass.....	each, \$48.00
Real Bronze.....	" 50.00
Nickel Plated.....	" 54.00
Silver Plated.....	" 58.00

**CENTER LAMP,  
For Mineral Sperm Oil.**



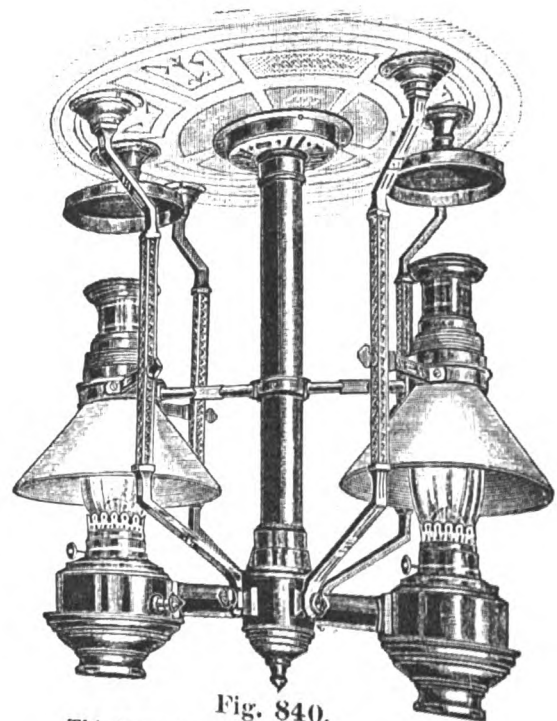
**Fig. 837.**

**Description and Prices.  
Fig. 837.**

Bracket and fittings of solid cast metal. Can  
be fitted with Dual or Argand burner. Standard  
drop over all, 21½ inches.

Brass.....	each, \$18.00
Real Bronze.....	" 19.00
Nickel Plated.....	" 21.50
Silver Plated.....	" 23.00

**TORNADO CHANDELIER,  
For Mineral Sperm Oil.**



**Fig. 840.**

This Lamp is constructed on the celebrated "Tor-  
nado" principle, by which a brilliant and steady light  
is attained. Heavy cast fittings, No. 3 Dual burners  
and porcelain shades.

Standard drop over all, 24 inches.

Brass.....	each, \$32.00
Real Bronze.....	" 33.00
Nickel Plated.....	" 36.00
Silver Plated.....	" 40.00





**SQUARE TUBULAR LAMP.**

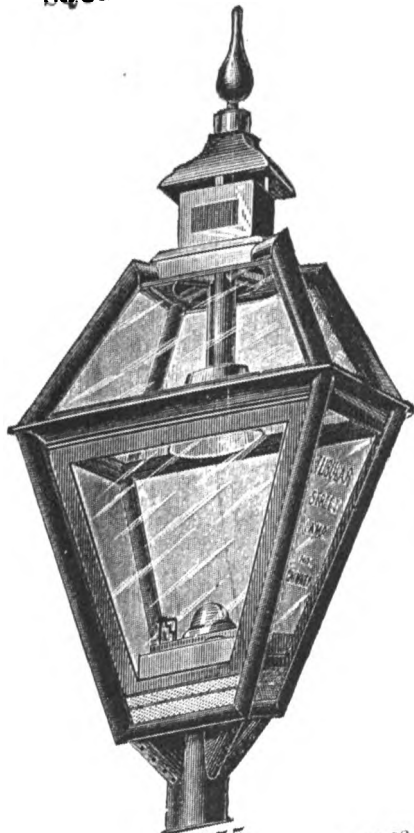


Fig. 855.

No. 2, tin, painted ..... each, \$6.00  
This Lamp can be regulated to burn 8, 16 or 24  
hours.

**POST LAMP—FOR GAS.**  
Regular Pattern.

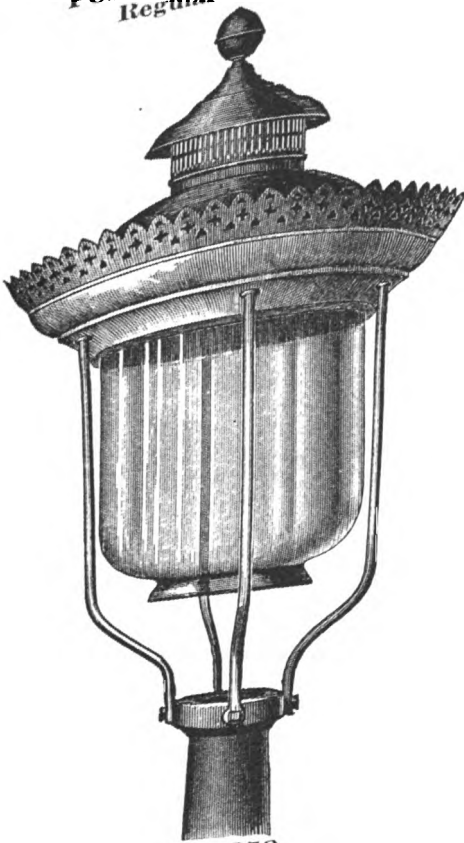


Fig. 858.

Height, 36 inches. Diameter, 18 inches.  
No. 1, Japanned Tin Top ..... each, \$7.00  
No. 2, Galvanized Iron Top ..... " 7.00  
No. 3, Japanned Copper Top ..... " 9.00  
With Name Plates for Street Corners.  
No. 21, Japanned Tin Top ..... each, \$9.00  
No. 22, Galvanized Iron Top ..... " 9.00  
No. 23, Japanned Copper Top ..... " 11.00

**STREET LAMPS.**  
**CORPORATION LAMP.**

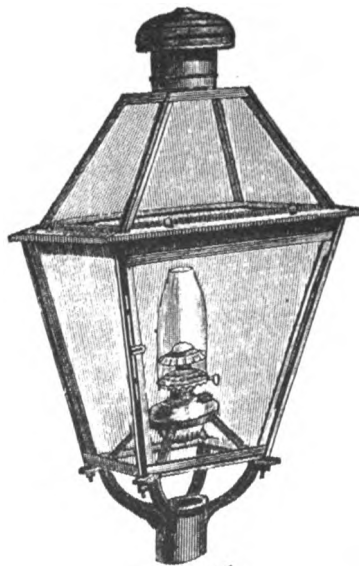


Fig. 856.

Complete with Fount, Burner, Chimney and  
Iron Socket for post.....each, \$3.60

**HANGING LAMP—FOR GAS.**

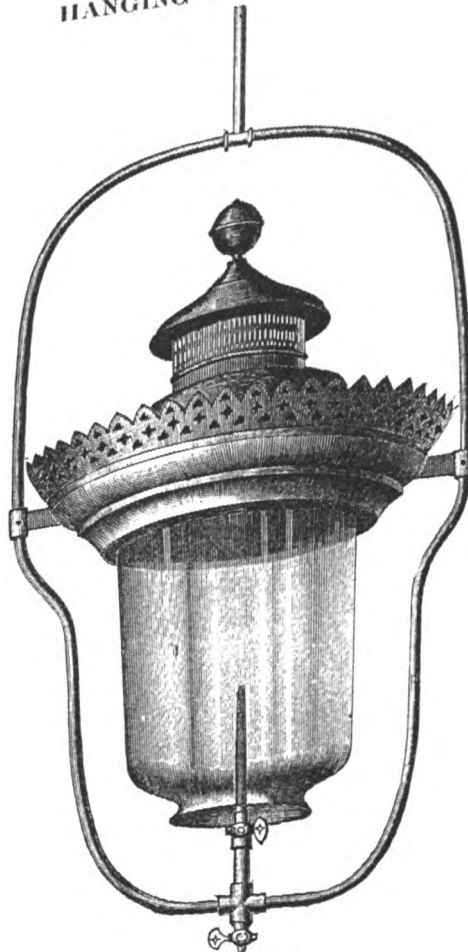


Fig. 859.

Height, 36 inches. Diameter, 18 inches.  
No. 31, Japanned Tin Top ..... each, \$9.00  
No. 32, Galvanized Iron Top ..... " 9.00  
No. 33, Japanned Copper Top ..... " 11.00  
Furnished complete with gas pipe, cocks, nipple and  
burner.

**BRACKET LAMPS.**

Same style as above Lamp, but with bracket to fasten  
to wall.  
Brackets to project 6 or 12 inches from wall as desired.  
When not specified I send 12 inch bracket

No. 11, Japanned Tin Top ..... each, \$7.00  
No. 12, Galvanized Iron Top ..... " 7.00  
No. 13, Japanned Copper Top ..... " 9.00

**GLOBE TUBULAR LAMP.**

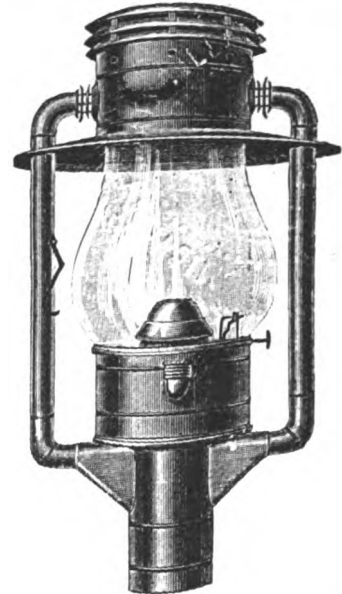


Fig. 857.

No. 3, tin, painted ..... each, \$5.50  
No. 3, brass or copper, painted ..... " 7.50  
This Lamp can be regulated to burn 8, 16 or 24  
hours.

**POST LAMP—FOR GAS.**

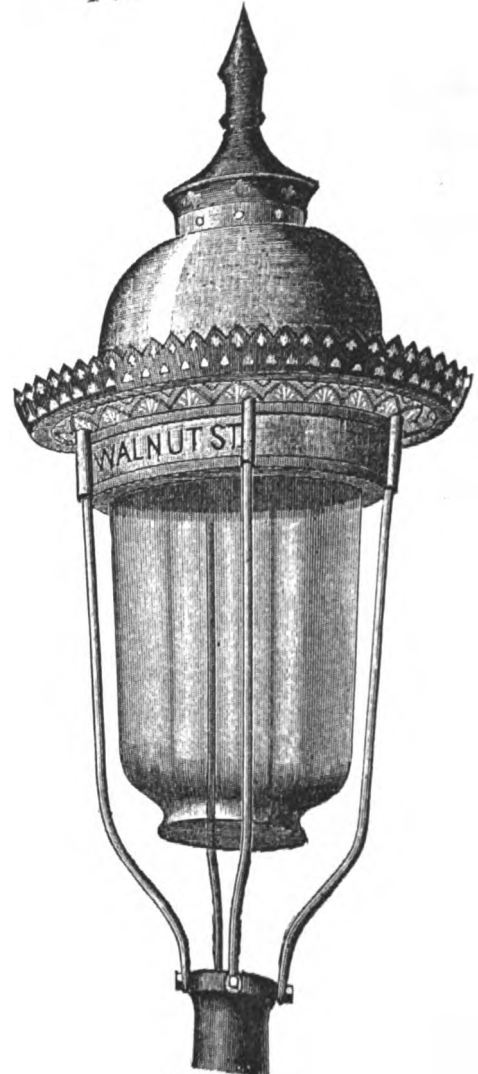


Fig. 860.

Porcelain or Glass Domes, with copper ventilator.  
Name plates, ground glass.  
No. 57, height, 43 ins.; diameter, 20 ins.....each, \$11.00  
Without Name Plates.  
No. 51, height, 40 ins., diameter, 20 ins..... each, \$9.00  
No. 52, " 42 " " " " " " " " 13.00  
Lamp posts, wood or iron, iron brackets,  
domes, globes, etc.  
Prices on application.





THORNTON N. MOTLEY, NEW YORK.

## RUBBER HOSE.

The base or strength in this Hose is cotton fabric prepared for the purpose in a way that gives the greatest amount of strength to a given quantity of material.

### CONDUCTING HOSE—TWO PLY.

Used for conducting water under moderate pressure. The largest sizes are used for railway tanks and depot purposes.

Int. diam.	Per ft.	Int. diam.	Per ft.	Int. diam.	Per ft.
1/2 in.	\$0.20	2 ins.	\$0.66	5 ins.	\$1.65
3/4 "	.25	2 1/4 "	.75	6 "	1.98
1 "	.33	2 1/2 "	.83	7 "	2.31
1 1/4 "	.42	2 3/4 "	.92	8 "	2.64
1 1/2 "	.50	3 "	.99	9 "	2.97
1 3/4 "	.58	4 "	1.32	10 "	3.33

### HYDRANT HOSE—THREE PLY.

For hydrant, garden and force pump uses, where the pressure does not exceed 75 lbs. per square inch.

Int. diam.	Per ft.	Int. diam.	Per ft.	Int. diam.	Per ft.
1/2 in.	\$0.25	1 1/2 ins.	\$0.70	3 ins.	\$1.20
3/4 "	.30	2 "	.80	3 1/2 "	1.40
1 "	.40	2 1/4 "	.90	4 "	1.60
1 1/4 "	.50	2 1/2 "	1.00		
1 1/2 "	.60	2 3/4 "	1.10		

### ENGINE HOSE—FOUR PLY.

Will sustain a pressure of from 100 to 150 lbs. per square inch, and is recommended, particularly the larger sizes, for all general purposes where a good, strong, reliable hose is required.

Int. diam.	Per ft.	Int. diam.	Per ft.	Int. diam.	Per ft.
1/2 in.	\$0.30	1 1/2 ins.	\$0.75	2 1/2 ins.	\$1.25
3/4 "	.37	1 3/4 "	.87	2 3/4 "	1.37
1 "	.50	2 "	1.00	3 "	1.50
1 1/4 "	.62	2 1/4 "	1.12	4 "	2.00

### SUCTION HOSE.

ON SPIRAL BRASS WIRE.		ON SPIRAL TINNED OR IRON WIRE.	
Int. diam.	Per ft.	Int. diam.	Per ft.
3/4 in.	\$0.77	1 1/2 ins.	\$1.65
1 "	1.00	1 3/4 "	2.10
1 1/4 "	1.25	2 "	2.50

### LARGE SUCTION HOSE.

For wrecking, mining purposes, etc. Made to order on flat galvanized iron, wound spirally, of any size and length required. This hose is unequalled for its flexibility and durable qualities.

Int. diam.	Per ft.	Int. diam.	Per ft.	Int. diam.	Per ft.	Int. diam.	Per ft.
2 1/2 ins.	\$3.10	4 1/2 ins.	\$6.70	6 1/2 ins.	\$10.50	9 ins.	\$17.50
3 "	4.00	5 "	7.60	7 "	12.00	10 "	20.00
3 1/2 "	4.90	5 1/2 "	8.50	7 1/2 "	13.50	12 "	25.00
4 "	5.80	6 "	9.50	8 "	15.00		

### PURE TUBING.

Int. diam.	Per ft.	Int. diam.	Per ft.	Int. diam.	Per ft.
1/8 in.	\$0.08	5-16 in.	\$0.18	5/8 in.	\$0.30
3-16 in.	.12	3/8 in.	.20	3/4 "	.35
1/4 in.	.16	1/2 "	.25	1 "	.45

Any thickness desired, and in lengths from 12 to 50 feet.

### RUBBER TUBING.

### WITH CLOTH INSERTION.

Int. diam.	Per ft.	Int. diam.	Per ft.	Int. diam.	Per ft.
1/8 in.	\$0.10	5-16 in.	\$0.20	5/8 in.	\$0.33
3-16 in.	.14	3/8 in.	.23	3/4 "	.38
1/4 in.	.18	1/2 "	.28	1 "	.50

Made in lengths of 12 feet each.

### COTTON AND LINEN HOSE.

#### RUBBER LINED COTTON HOSE.

Warranted to stand a pressure of 250 lbs. to the square inch.

Int. diam.	Per ft.	Int. diam.	Per ft.
1 1/4 ins.	\$0.40	2 1/4 ins.	\$0.60
1 1/2 "	.45	2 1/2 " Fire Department size, .65	
2 "	.55		

When ordering Hose with couplings, a sample coupling should be sent, that I may furnish the correct thread.

#### LINEN HOSE.

Unlined and seamless.

Int. diam.	Per ft.	Int. diam.	Per ft.
1 in.	\$0.16	2 ins.	\$0.25
1 1/4 "	.18	2 1/4 "	.27
1 1/2 "	.20	2 1/2 "	.29
1 3/4 "	.23	3 "	.35

#### RUBBER LINED LINEN HOSE.

Seamless, and capable of great resistance.

Int. diam.	Per ft.	Int. diam.	Per ft.
1 1/4 ins.	\$0.40	2 1/4 ins.	\$0.60
1 1/2 "	.45	2 1/2 " Fire department size, .65	
2 "	.55		

### FIRE DEPARTMENT PLAY PIPES.

#### FLEXIBLE RUBBER PLAY PIPE.



Fig. 862.

2 1/2 inches internal diameter at the butt, and about 33 inches long, with fittings complete.

With Brass Fittings and Leather Handles, complete.....	each, \$18.00
With Brass Fittings and Brass Handles, complete.....	" 16.50
Rubber Pipes only, without fittings.....	" 8.00
Leather Handles, with swivel attachm't... 2 in., ea., \$9.00; 2 1/2 in., ea. 12.00	
Brass " " " " 2 in., ea., 7.50; 2 1/2 in., ea. 9.00	

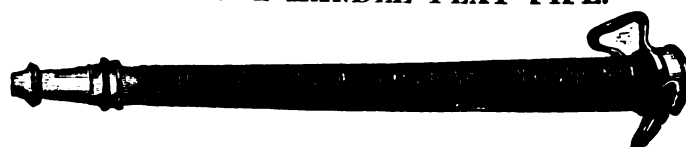


Fig. 863.

Made with Brass, Rubber or Leather Tubes, any desired length.

Internal diameter tube large end..... inches,	2	2 1/2	2 1/2	2 1/2
Length..... "	20	24	30	36
Brass Tubes, wound and painted..... each,	\$9.00	11.00	12.00	15.00
Brass Tubes, plain..... "	7.50	9.50	11.00	13.50
Brass Tubes, w'd and p't'd, without Hds., "	6.50	8.50	10.00	12.50
Rubber Tubes, swivel handles..... "			15.00	18.00
Leather Tubes, "..... "				18.00

# HOSE FITTINGS.

## BRASS HOSE PIPE, WITH COCK.

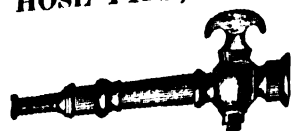


Fig. 864.

## BRASS HOSE PIPE, WITH SCREW TIP.



Fig. 865.

### Prices, Brass Hose Pipes with Cock. Fig. 864.

Size Couplings.....inches,	3/4	3/4	3/4	3/4	1	1	1	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	2	2	2 1/2	2 1/2
Length.....inches,	6	8	9	12	8	9	12	12	15	20	12	15	20	12	20	15	24
Pipes.....per doz.,	\$11.00	13.00	18.00	18.00	15.00	20.00	20.00	40.00	45.00	55.00	55.00	60.00	80.00	80.00	110.00	150.00	200.00

### Prices, Brass Hose Pipes, with Screw Tip. Fig. 865.

Size Couplings.....inches,	3/4	3/4	1	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	2	2	2 1/2	2 1/2
Length.....inches,	8	12	12	15	20	24	30	25	30	20	12	20	24
Pipes.....per doz.,	\$8.00	10.00	10.00	20.00	24.00	30.00	25.00	30.00	36.00	38.00	50.00	75.00	100.00

## MAGIC SPRAY NOZZLE.

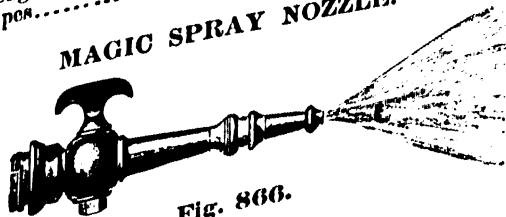


Fig. 866.

Throws solid stream or spray.  
3/4 inch...per doz., \$12.00 1 inch...per doz., \$15.00

## HOSE PIPE TIP.



Fig. 867.

To fit 3/4 and 1 inch pipes.  
Per doz.....\$4.00

## HOSE NOZZLE.



Fig. 868.

Sizes.....inches,	1/2	3/4	1
Entire length.....	4 1/2	4 1/2	4 1/2
Per dozen.....	\$3.00	3.50	4.00

## HOSE CLAMP.



Fig. 871.

Size for Three-ply Hose, inches,	1/2	3/4	1	1 1/4
Per dozen.....	\$1.50	1.50	2.00	2.50
Size for Three-ply Hose, inches,	1 1/2	2	2 1/2	3
Per dozen.....	\$3.00	4.00	7.00	10.00

Clamps will always be sent for three ply hose unless otherwise ordered.

## HOSE COUPLING.



Fig. 869.

Sizes.....inches,	1/2	3/4	1	1 1/4	1 1/2	2
Couplings, Fig. 869, per doz.,	\$2.40	2.65	4.40	10.00	14.00	24.00
For Iron Pipe.....	2.65	4.65	10.50	15.00	26.00	

## HOSE COUPLINGS, WITH LUGS.

Sizes.....inches,	2	2 1/2	3	3 1/2	4	5	6
Reg Coupl. pr. doz.,	\$30.00	48.00	76.00	120.00	150.00	250.00	450.00
For Iron Pipe.....	32.00	50.00	76.00	120.00	150.00	250.00	450.00

For either part of coupling, two-thirds list price.

## HOSE COUPLING, WITH BANDS.

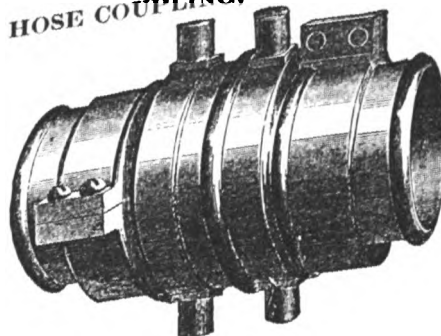


Fig. 870.

Sizes.....inches,	1 1/4	1 1/2	2	2 1/2
Per dozen.....	\$24.00	30.00	36.00	48.00
Sizes.....inches,	3	3 1/2	4	
Per dozen.....	\$96.00	150.00	200.00	

## HOSE CAP.

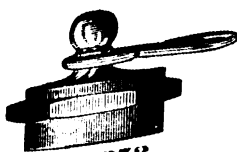


Fig. 872.

## Prices, Brass Hose Caps. Fig. 872.

Sizes.....inches,	3/4	1	1 1/4	1 1/2	2	2 1/2
Per dozen.....	\$4.00	6.00	8.00	10.00	15.00	24.00

## Prices, Brass Hose Sprinklers. Fig. 873.

Sizes.....inches,	1 1/2	2	2 1/2	3	3 1/2	4
Per doz.....	\$3.50	4.50	6.00	9.00	12.00	18.00

## PATENT HOSE SPANNERS.

Made of bronze or malleable iron. Works either right or left hand.  
Malleable Iron.....per doz., \$ 6 00  
Bronze.....".....".....12.00

## HOSE SPANNER AND HYDRANT WRENCH COMBINED.

2 1/2 inch.....per doz., \$6.00

## POCKET HOSE SPANNER.

This is a very useful article and should be in the possession of firemen at all times. It is both strong and efficient.  
Japaned...per doz., \$9.00 Nickel Plated...per doz., \$15.00

## PERFECTION LAWN SPRINKLER.

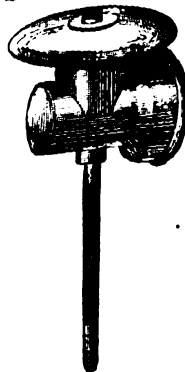


Fig. 874.

This Sprinkler will water a space 30 ft. in diameter and requires only a very small pressure to turn it.

### Directions.

Screw on to hose so that the sprinkler will stand upright when the pin is placed in the rod; turn on the water according to the circle desired to be watered.  
Per dozen.....\$15.00

## BRASS HOSE STRAPS.

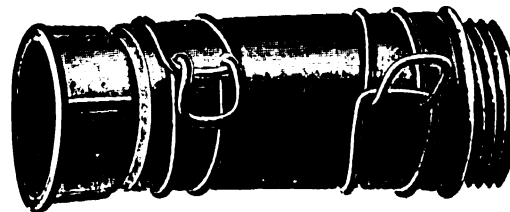


Fig. 875.

Specially adapted for railroad use, air brakes, engine, tender hose, etc.

Nos.	Width.	Length.	Per doz.	Nos.	Width.	Length.	Per doz.
2	1/2 in.	3 3/4 ins.	\$0.40	20	1 1/4 ins.	7 1/2 ins.	\$1.20
4	1/2 "	3 3/4 "	.40	22	1 3/4 "	7 1/2 "	1.40
6	3/4 "	4 1/4 "	.60	24	1 3/4 "	8 "	1.40
8	3/4 "	4 3/4 "	.60	26	2 "	8 1/2 "	1.60
10	1 "	5 "	.80	28	2 "	9 "	1.60
12	1 "	5 3/8 "	.80	30	2 1/4 "	9 1/2 "	1.80
14	1 1/4 "	6 "	1.00	32	2 1/4 "	10 "	1.80
16	1 1/4 "	6 3/8 "	1.00	34	2 1/2 "	10 1/2 "	2.00
18	1 1/2 "	6 3/4 "	1.20	36	2 1/2 "	11 "	2.00

## HOSE STRAP FASTENERS.

Pliers made especially for applying above straps 1/2 to 1 inch inclusive, each, \$0.50. 1 1/4 to 2 1/2 inch inclusive, each, \$0.75. In applying these straps, place the large end under the hose, and bring the two ends together, carrying the small end through the large end, using the finished arm of the fastener to bring the small end of the strap sufficiently through to admit the nose of the fastener. By these means the strap is tightened.

## EXCELSIOR REEL.

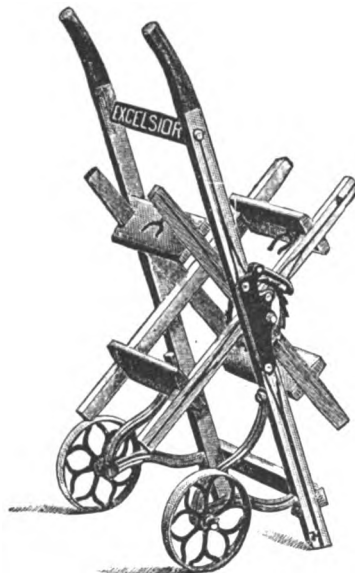


Fig. 876.

Strong, durable and light running.

Nos.	Capacity.	Each.
1	50 feet, $\frac{3}{4}$ inch hose.	\$2.50
2	100 " " "	3.00
3	200 " " "	5.00

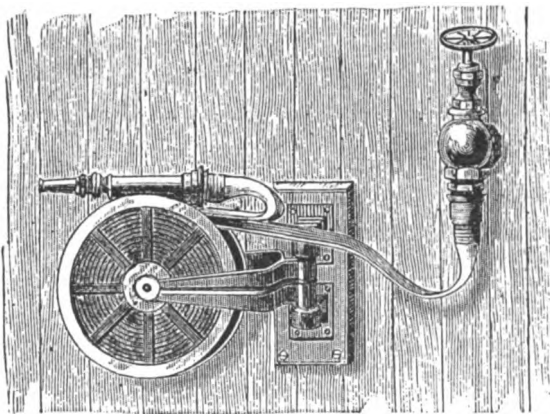
HOSE REELS.  
PATENT SWINGING REEL.

Fig. 877.

With this reel the hose will not become cracked or broken, as there are no short flat folds, and having an easy roller to prevent it. It occupies a very small space, and will swing to any angle from the wall, so that the hose can be drawn in any direction by taking hold of the nozzle.

No.	Capacity, 50 feet linen hose.	each.
1	" " "	\$7.00
2	100 " " "	12.00

## PEERLESS REEL.

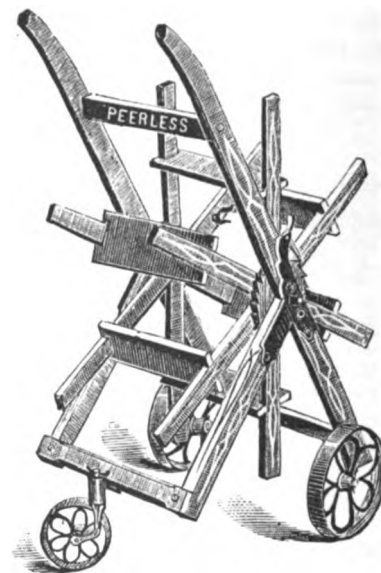


Fig. 878.

Light, but well braced. Will outwear any reel of its capacity made.

Nos.	Capacity.	Each.
1	100 feet, $\frac{3}{4}$ inch hose.	\$3.00
2	150 " " "	3.50

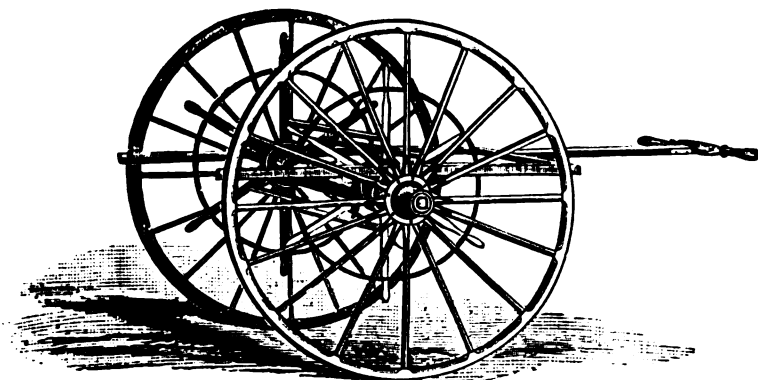
PORTABLE WAREHOUSE HOSE REELS.  
WOOD FRAME, WOOD WHEELS.

Fig. 879.

This Carriage has a strong wooden frame, thoroughly braced with iron, and is constructed so that the frame tilts up out of the way. Thus it occupies, when not in use, the least possible space.

Nos.	Size of Wheels.	Capacity of Rubber Hose.	Each.
1	56 inches.	500 feet, $2\frac{1}{2}$ inch.	\$35.00
2	48 "	350 " " "	30.00
3	42 "	200 " " "	25.00
4	36 "	200 " " "	12.00

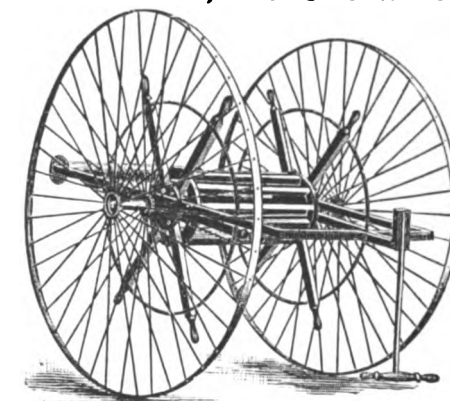


Fig. 880.

This Reel has a strong iron frame with pipe holder roller on rear of frame. Furnished with bicycle or wood wheels. I will send wood wheels unless bicycle wheels are specified.

Nos.	Size of Wheels.	Capacity of Rubber Hose.	Each.
11	56 inches.	500 feet, $2\frac{1}{2}$ inch.	\$40.00
12	48 "	350 " " "	35.00
13	42 "	200 " " "	30.00

## VILLAGE HOOK AND LADDER TRUCK.

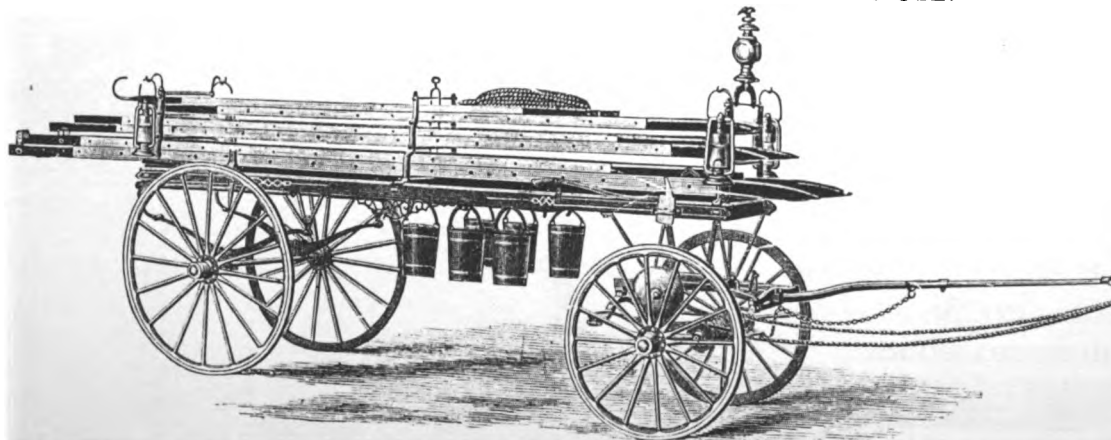


Fig. 881.

## Equipments.

One 20 foot ladder, one 18 foot ladder, which can be spliced, making a 35 foot extension; one 18 foot single, one 16 foot single, one 16 foot roof, one 16 foot lifting pole, four pipe poles, six fire buckets, 100 feet pull down rope, hook and chain, four brass hand lanterns, one headlight; one gong, striking with every revolution of the wheel; one 60 foot drag rope, two pick axes, two fire axes; patent wheels, brass hub bands, with screw cap; oil tempered springs; supplies held in place by patent catch; the three large ladders carried separately on rubber covered rollers, balance of ladders nested; painted English vermilion and striped.

Height over all, 6 $\frac{1}{2}$  feet.

Length over all, 25 feet.

Weight, 1200 pounds.

## Prices on application.

Special prices quoted on Hook and Ladder Trucks of all sizes, and with equipments as desired, also Hose Carts, Jumpers, Steam and Hand Fire Engines. Will furnish a complete catalogue of fire department supplies covering the entire line to any one desiring such goods.

## OAK TANNED LEATHER BELTING.



Fig. 882.

## Prices, Single Leather Belting.

Width.	Per foot.	Width.	Per foot.	Width.	Per foot.	Width.	Per foot.
1 in.	\$0.10	4 1/2 ins.	\$0.56	13 ins.	\$1.68	24 ins.	\$3.54
1 1/4 "	.13	5 "	.63	14 "	1.82	26 "	3.92
1 1/2 "	.17	5 1/2 "	.70	15 "	1.98	28 "	4.30
1 3/4 "	.20	6 "	.76	16 "	2.14	30 "	4.64
2 "	.23	6 1/2 "	.83	17 "	2.31	32 "	5.00
2 1/4 "	.26	7 "	.90	18 "	2.49	34 "	5.35
2 1/2 "	.30	8 "	1.02	19 "	2.66	36 "	5.70
2 3/4 "	.33	9 "	1.15	20 "	2.84	40 "	6.40
3 "	.36	10 "	1.29	21 "	3.02	44 "	7.10
3 1/2 "	.43	11 "	1.42	22 "	3.20	48 "	7.80
4 "	.50	12 "	1.55	23 "	3.37		

Double Belts twice the price of single.

## Prices, Round Leather Belting.

SOLID.		TWIST.		TWIST.	
Diameter.	Per foot.	Diameter.	Per foot.	Diameter.	Per foot.
1/2 in.	\$0.05	1/2 in.	\$0.06	1 in.	\$0.30
3/8 "	.07	3/8 "	.10	"	.36
1/2 "	.10	1/2 "	.14	"	.46
5/8 "	.14	5/8 "	.18	"	.60
3/4 "	.18	3/4 "	.22	1 "	.72

## ELECTRIC LEATHER BELTING.

This is the only reliable belting for dynamos. Made from specially selected leather and put together with patent screw fastenings. These Belts are all Double Ply.

Width.	Per foot.	Width.	Per foot.	Width.	Per foot.	Width.	Per foot.
1 in.	\$0.12	5 ins.	\$0.70	13 ins.	\$1.85	30 ins.	\$5.12
1 1/2 "	.20	6 "	.84	14 "	2.00	32 "	5.50
2 "	.26	7 "	1.00	15 "	2.18	34 "	5.90
2 1/2 "	.33	8 "	1.14	16 "	2.36	36 "	6.30
3 "	.40	9 "	1.27	18 "	2.74	40 "	7.05
3 1/2 "	.47	10 "	1.42	20 "	3.13	44 "	7.80
4 "	.55	11 "	1.57	22 "	3.52	48 "	8.60
4 1/2 "	.62	12 "	1.70	24 "	3.90		

## SOLID COTTON BELTING.

Formed by weaving several layers of duck solid in one body. As in leather, this belt partakes of the strain in all its parts in passing the pulley. The cost is much less than leather or rubber belting. For cross bands they are equal to any except leather. They are unaffected by heat, cold or moisture, and are especially adapted for elevators, gin bands, carrying belts, railway belts, sand belts, agricultural belts and for driving machinery. A simple application of soft bar soap will give the belt a smooth and polished surface.

## TWO PLY.

Width.	Per foot.	Width.	Per foot.	Width.	Per foot.	Width.	Per foot.
1 in.	\$0.04	2 1/2 ins.	\$0.07	3 1/2 ins.	\$0.09	5 ins.	\$0.14
1 1/2 "	.05	3 "	.08	4 "	.10	6 "	.18
2 "	.06						

## THREE PLY.

Width.	Per foot.	Width.	Per foot.	Width.	Per foot.	Width.	Per foot.
1 1/2 ins.	\$0.07	4 ins.	\$0.16	8 ins.	\$0.32	16 ins.	\$0.75
2 "	.09	4 1/2 "	.18	9 "	.36	18 "	.86
2 1/2 "	.11	5 "	.20	10 "	.40	20 "	.96
3 "	.13	6 "	.24	12 "	.50		
3 1/2 "	.15	7 "	.28	14 "	.62		

## FOUR PLY.

Width.	Per foot.	Width.	Per foot.	Width.	Per foot.	Width.	Per foot.
4 ins.	\$0.21	7 ins.	\$0.34	12 ins.	\$0.60	20 ins.	\$1.15
4 1/2 "	.24	8 "	.38	14 "	.75	22 "	1.35
5 "	.26	9 "	.44	16 "	.90		
6 "	.30	10 "	.50	18 "	1.00		

Five and Six-Ply Cotton Belting furnished when desired. Prices on application.

## RAW HIDE LACE LEATHER.

Closely trimmed, very pliable, and guaranteed not to get hard. Number of square feet marked on every side, also carefully packed in dozen lots to suit.

Per square foot.....\$.....

## TANNED LACE LEATHER.

This Leather is carefully selected and put up in packages. This preserves the leather and keeps it fresh and free from dust.

Per square foot.....\$.....

## CUT LACING.

Every string of lace is tested before it is put up in bunches, therefore no defective lace can be sold.

## Prices, Tanned and Raw Hide.

Sizes.....	Inch.	1/4	5-16	3/8	7-16	1/2	5/8	3/4
Per 100 feet.....	\$1.00	1.25	1.50	1.75	2.00	2.75	3.25	

## LEATHER LINK BELTING.



Fig. 883.

## Prices, Link Belting.

Thickness.....	Inch.	1/8	1/4	1/2	1
Per foot per inch of width.....	\$0.20	.27	.30	.35	

1/8 inch thick belt is considered standard size and good for all ordinary purposes up to 12 inches.

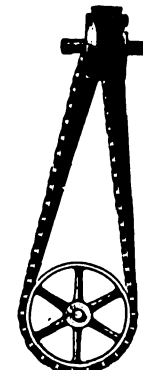


Fig. 884.

These Patent Compressed Leather Link Belts are made from White Oak Leather cut into small links and are compressed at each end, then joined together with steel bolts and riveted.

The compressing of the ends of the link is a very important improvement, leaves the centre of the link in its original thickness, thereby making the surface of the belt more compact and giving it a greater grip power.

The flexibility of the Leather Link Belts make them very desirable for belts running half crossed (or quarter turn), as they lie perfectly flat and have an even bearing on the pulleys.

## RUBBER BELTING.

Made on extra heavy cotton duck, woven from the best quality cotton yarn with smooth metallic rubber surface.

## TWO PLY.

For agricultural machines, railway belts, and other light work.

Width.	Per foot.	Width.	Per foot.	Width.	Per foot.	Width.	Per foot.
1 in.	\$0.07	4 ins.	\$0.30	10 ins.	\$0.75	18 ins.	\$1.41
1 1/4 "	.09	4 1/2 "	.33	11 "	.83	20 "	1.58
1 1/2 "	.11	5 "	.36	12 "	.91	22 "	1.76
2 "	.15	6 "	.43	13 "	1.00	24 "	1.96
2 1/2 "	.18	7 "	.51	14 "	1.08	26 "	2.18
3 "	.22	8 "	.59	15 "	1.16	28 "	2.42
3 1/2 "	.26	9 "	.67	16 "	1.25		

## THREE PLY.

Width.	Per foot.	Width.	Per foot.	Width.	Per foot.	Width.	Per foot.
2 ins.	\$0.17	5 ins.	\$0.43	11 ins.	\$1.00	18 ins.	\$1.70
2 1/2 "	.22	6 "	.52	12 "	1.08	20 "	1.90
3 "	.26	7 "	.60	13 "	1.18	22 "	2.12
3 1/2 "	.30	8 "	.70	14 "	1.28	24 "	2.36
4 "	.34	9 "	.80	15 "	1.38	26 "	2.60
4 1/2 "	.39	10 "	.90	16 "	1.50	28 "	2.84

## FOUR PLY.

Width.	Per foot.	Width.	Per foot.	Width.	Per foot.	Width.	Per foot.
2 ins.	\$0.21	9 ins.	\$0.95	22 ins.	\$2.52	42 ins.	\$5.32
2 1/2 "	.26	10 "	1.07	24 "	2.80	44 "	5.60
3 "	.31	11 "	1.18	26 "	3.08	46 "	5.88
3 1/2 "	.37	12 "	1.30	28 "	3.36	48 "	6.16
4 "	.42	13 "	1.42	30 "	3.64	50 "	6.44
4 1/2 "	.47	14 "	1.54	32 "	3.92	52 "	6.72
5 "	.52	15 "	1.66	34 "	4.20	54 "	7.00
6 "	.62	16 "	1.78	36 "	4.48	56 "	7.28
7 "	.73	18 "	2.02	38 "	4.76	58 "	7.56
8 "	.84	20 "	2.26	40 "	5.04	60 "	7.84

Five and Six Ply Rubber Belting at an advance of 25 and 50 per cent. respectively on Four Ply prices.

Endless belts made to order, for which three extra feet will be charged for the splice, and 10 per cent. additional on the net price of the whole belt.

## METALLIC TIPPED LACING.

Made from carefully selected leather with a metallic tip on each end of lace, which will be found of great advantage in using same.

Length of	Width of	Will Lace	Per	Length of	Width of	Will Lace	Per
Lace.	Lace.	Belt Width.	Dozen.	Lace.	Lace.	Belt Width.	Dozen.
2 1/2 ft.	1/8 in.	2 to 2 1/2 in.	\$0.30	5 ft.	1/8 in.	7 to 8 in.	\$0.90
3 "	1/8 "	3 to 3 1/2 "	.35	5 1/2 "	1/8 "	9 to 10 "	1.05
3 1/2 "	1/8 "	4 to 4 1/2 "	.45	6 "	1/8 "	11 to 12 "	1.25
4 "	1/8 "	5 to 5 1/2 "	.60	6 1/2 "	1/8 "	Main Belts.	1.75
4 1/2 "	1/8 "	6 to 6 1/2 "	.75	7 "	1/8 "	"	2.25

## LEATHER BELT STUFFING.

This stuffing will preserve the belt and keep same pliable so that it will adhere closer to the pulley and prevent slipping. It also closes the pores of the leather and prevents the belt from further stretching.

Cans holding pounds.....	1	2	5	10
Per Can.....	\$0.35	.60	1.25	2.50

## BELT FITTINGS AND TOOLS.

## MILLER'S PATENT BELT CLAMP.

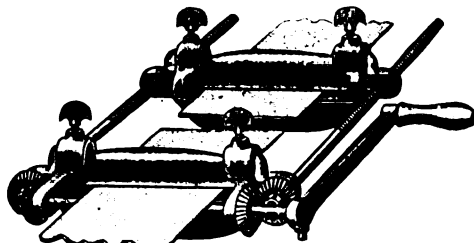


Fig. 885.

This is one of the most complete and useful machines for drawing together ends of a belt when wishing to lace same while on the pulley.

8 inch.....	each, \$14.00	24 inch.....	each, \$30.00
12 ".....	" 18.00	28 ".....	" 34.00
16 ".....	" 22.00	32 ".....	" 38.00
20 ".....	" 26.00	36 ".....	" 44.00

## POINTED BELT HOOKS.

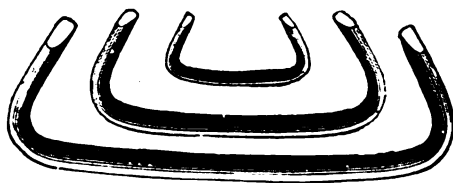


Fig. 887.

## NORWAY IRON.

Extra large sizes, inches.....	4	3½	3	2½				
Per 100.....	\$8.00	7.00	6.00	5.00				
Nos.....	1	2	3	4	5	6	7	8
Per 100... ..	\$3.00	2.00	1.60	1.40	1.10	.85	.60	.50
Nos.....	9	10	11	12	13	14	15	16
Per 100.....	\$0.40	.35	.30	.28	.26	.24	.20	.20

## Prices, Tools for Blake's Belt Studs.

Large Cutters for Rubber Belts.....	each, \$1.25
Small Cutters for Leather Belts.....	" .90
Awls to spread the slit.....	" .25
Awl and Pliers combined.....	" .40

## BLAKE'S BELT STUDS.

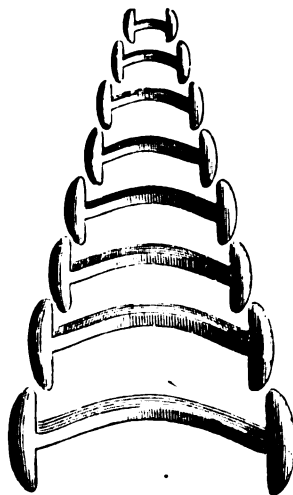


Fig. 888.

## POTTER'S PATENT BELT HOOKS.

## Hook for Single Leather.

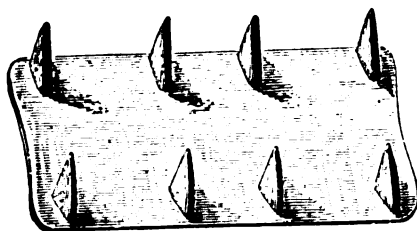


Fig. 890.

## SINGLE LEATHER.

Nos. Belt Width. Per 100.	Nos. Belt Width. Per 100.
1 1 inch. \$1.50	5 3 inches. \$3.50
2 1 1/2 " 2.00	6 3 1/2 " 4.50
3 2 " 2.50	7 4 " 5.50
4 2 1/2 " 3.00	

## DOUBLE LEATHER.

Nos. Belt Width. Per 100.	Nos. Belt Width. Per 100.
8 2 inches. \$5.00	11 3 1/2 inches. \$8.50
9 2 1/2 " 6.50	12 4 " 9.50
10 3 " 7.50	

## STEEL BELT COUPLING.



Fig. 892.

For round bands of every description.

Diameter, inches.....	1/2	3/4	1	1 1/4	1 1/2	2
Per dozen.....	\$2.00	2.00	2.00	2.50	3.00	
Diameter, inches.....	1 3/4	2	2 1/4	2 1/2	3	4
Per dozen.....	\$3.50	4.00	5.00	6.00		
Diameter, inches.....	4 1/2	5	6	8	10	12
Per dozen.....	\$9.00	13.00	18.00	22.00		

## THE PORTER BELT TIGHTENER.

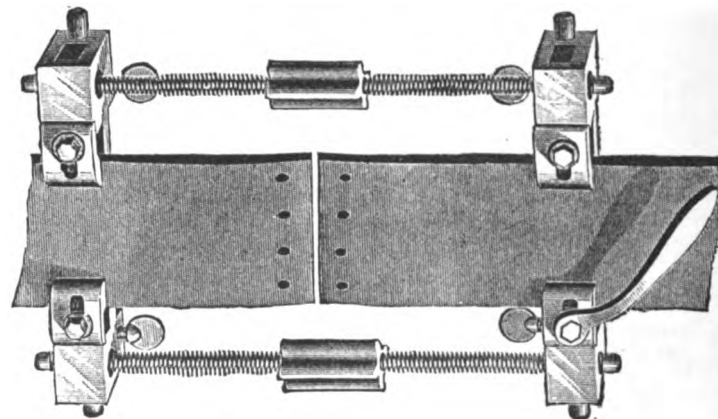


Fig. 886.

Capacity, 2 to 20 inches.....each, \$12.00

## CHAMPION BELT HOOKS.

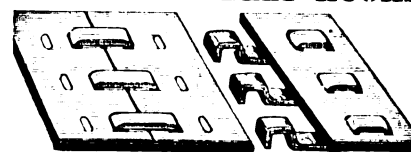


Fig. 889.

The above cut shows the substantial manner in which the ends of the belt are held by the Champion Hooks, and the impossibility of their tearing out. This Hook can be taken out and put in any number of times without impairing its usefulness, as it always retains its original shape.

No. 1, per 100.....	\$0.75
" 2, ".....	1.00
" 3, ".....	1.25
Punches complete for inserting hooks.....	each, 1.25

## Prices, Blake's Belt Studs.

Fig. 888.

Nos.....	00	0	1	2	3	4	5	6
Per 100.....	\$2.50	2.00	1.65	1.25	.90	.80	.70	.60

## For Double Leather and All Plys of Leather.

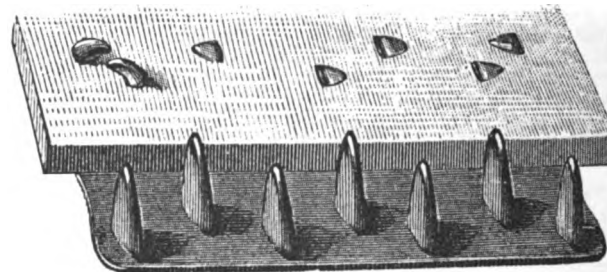


Fig. 891.

## OLD SINGLE LEATHER.

No. 28, for 3 inch extra wide belts, per 100, \$6.00

" 29, " 4 " " " " " " 8.00

## THREE PLY RUBBER.

Nos. Belt Width. Per 100. Nos. Belt Width. Per 100.

26 2 inches. \$1.00 20 3 inches. \$7.00

17 2 1/2 " 5.00 21 4 " 8.00

## FOUR PLY RUBBER.

Nos. Belt Width. Per 100. Nos. Belt Width. Per 100.

13 2 inches. \$5.00 15 3 inches. \$7.50

14 2 1/2 " 6.50 16 4 " 9.50

## RIVET SET AND HEADER.



Fig. 893.

## CAST STEEL EXTRA.

Nos.....00 and 0 1 and 2 3 and 4 5 and 6 7 and 8

Per dozen.....\$9.00 7.50 6.00 4.50 3.75

Suitable for Copper Rivets.....No. 7 No. 8 No. 9.

Rivet Sets.....numbers 2 3 4

## COPPER BELT RIVETS AND BURS.

Stubbs's Gauge—All sizes from 1/4 to 1 1/2 inches.

Nos.....7 8 9 10 11 12 13 14 15

Per lb.....\$0.49 .50 .52 .54 .56 .58 .60 .65 .70

## OLD FOUR PLY RUBBER.

No. 27, for 2 inch extra wide belts, per 100, \$8.00

" 18, " 3 " " " " 10.00

" 19, " 4 " " " " 12.00

## FIVE AND SIX PLY RUBBER.

No. Belt Width. Per 100. No. Belt Width. Per 100.

22 3 inches. \$10.00 23 4 inches. \$12.00

## OLD SIX, SEVEN AND EIGHT PLY RUBBER.

No. Belt Width. Per 100. No. Belt Width. Per 100.

24 3 inches. \$12.00 25 4 inches. \$15.00

Two or more hooks are used on belts wider than 4 inches.

## IMPROVED STEEL BELT COUPLING.

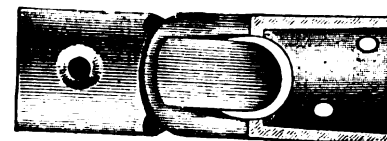


Fig. 894.

This Steel Coupling is perfectly smooth inside, the belt being fastened with three screws, thus forming a particularly strong fastening.

Diameter, inches.....	1/2	5/8	3/4	1
Per dozen.....	\$1.00	6.00	9.00	18.00



**BELT TOOLS AND WASHER CUTTERS.**  
**DRIVE BELT PUNCH.** **ROUND DRIVE PUNCH.**

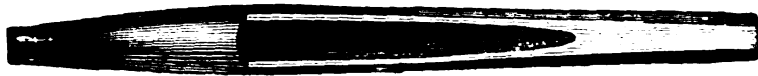


Fig. 895.

Nos. 1, 2, 3, 4, 5.....	per dozen, \$2.00
" 6, 7, 8, 9.....	" 2.25
" 10, 12.....	" 2.50

Assortments of Punches, Fig. 895.

No. 1, from No. 2 to 7 inclusive..	per doz. \$2.10
" 2, " 6 to 10 " " " "	2.35

Sizes of Punches, Fig. 895.

Per Twist Drill Gauge.

Punch, Nos.....	1	2	3	4
Gauge, ".....	40	35	30	25
Punch, Nos.....	5	6	7	8
Gauge, ".....	20	14	8	2
Punch, Nos.....	9	10	11	12
Gauge, inch.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$

**BAUER'S SPRING PUNCH.**

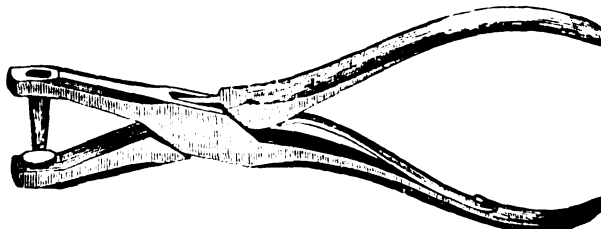


Fig. 897.

Spring Punches, with assorted tubes.....	per dozen, \$6.00
Extra tubes for spring punches.....	" 1.50

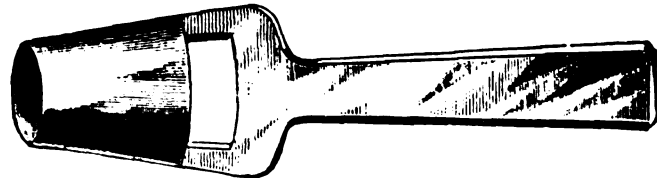


Fig. 896.

Prices, Round Punches, Fig. 896.

Sizes, ins. $\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1
Per doz. \$9.50	10.00	10.50	11.00	11.50	12.00
Sizes, ins. $\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$ to 1 $\frac{1}{2}$	1 $\frac{1}{2}$ to 1 $\frac{3}{4}$	
Per doz. \$13.00	13.50	14.00	25.00	32.00	
Sizes, inches....	1 $\frac{1}{2}$	1 $\frac{3}{4}$	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$
Each.....	\$2.75	3.50	3.75	4.00	4.25
Sizes, inches....	2 $\frac{1}{2}$	2 $\frac{3}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3
Each.....	\$4.75	5.25	6.00	7.50	9.00

**REVOLVING SPRING PUNCH.**

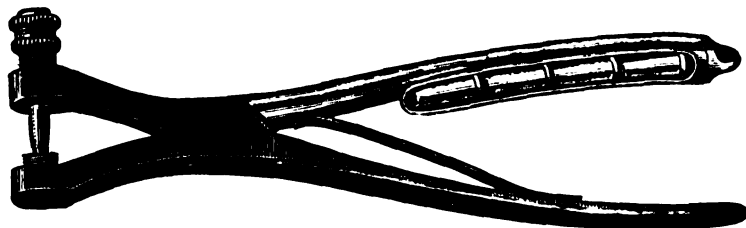


Fig. 898.

Punches, with four extra tubes in handle.....	per dozen, \$24.00
---	--------------------

**BELT AWL.**

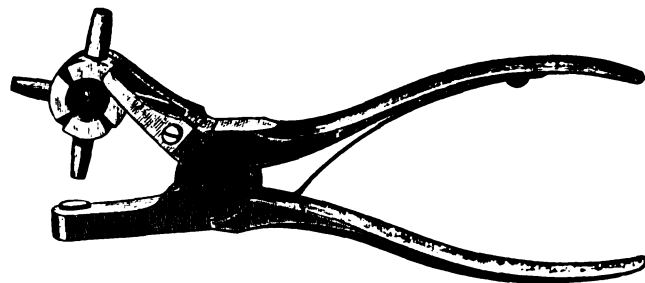


Fig. 899.

Punches, 4 tubes, per dozen, \$19.00	6 tubes.....per dozen, \$23.00
--------------------------------------	--------------------------------

**LOTHROP'S BELT AWL.**

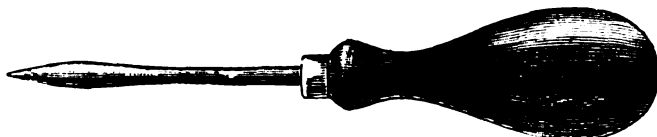


Fig. 900.

Cast Steel.....	per dozen, \$2.00
-----------------	-------------------

**BELT AWL WITH EYE.**



Fig. 901.

With Eyes for Lace Strings.....	per dozen, \$9.00
---------------------------------	-------------------

**BELT BORER.**

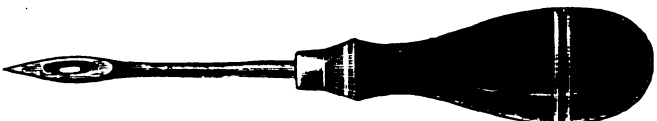


Fig. 902.

With Eye for Lace String.....	per dozen, \$2.00
-------------------------------	-------------------

**COOPER'S WASHER CUTTER.**

**PATENT LACE CUTTER.**

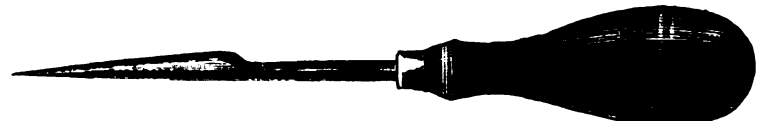


Fig. 903.

Cast Steel, forged.....	per dozen, \$2.50
-------------------------	-------------------

**APPLETON'S WASHER CUTTER.**

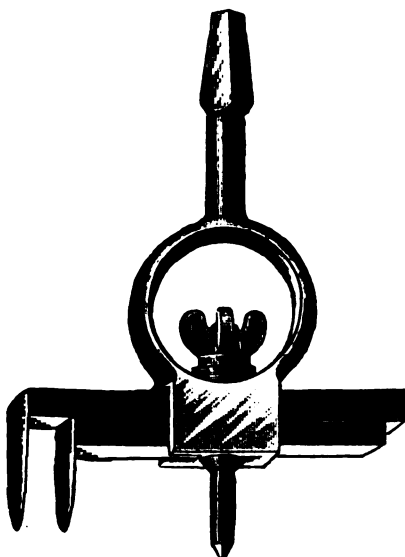


Fig. 905.

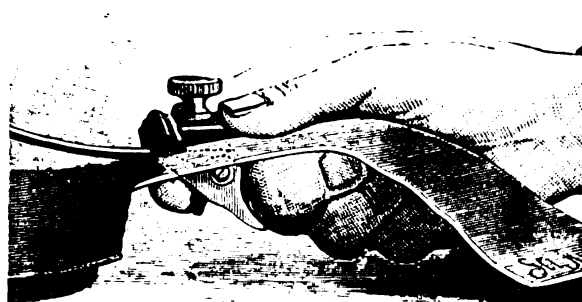


Fig. 904.

This is a perfect tool for cutting all kinds of lace leather, either thick or thin. It is made to cut any width from  $\frac{1}{8}$  to  $\frac{1}{2}$  inch, by an adjustable nickel plated gauge and thumb screw. Per dozen.....\$6.00

Prices, Cooper's Washer Cutters, Fig. 905.

Malleable iron, with Cutters forged from the best tool steel. Cutters made of any desired length for cutting cylinder gaskets. Per dozen.....\$10.00

Prices, Appleton's Washer Cutters, Fig. 906.

Tinned malleable iron, with cutters and centre of best cast steel. Per dozen.....\$16.00

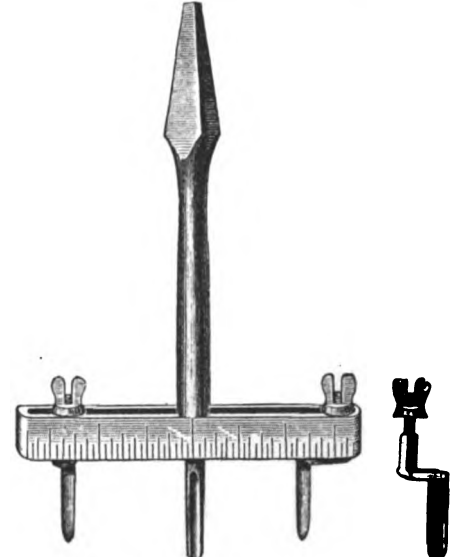


Fig. 906.

## PACKING.

## JONES' PATENT PACKING SPRING.



Fig. 907.

## Prices per Inch of Diameter of Cylinder.

	Per Inch.
Depth of Packing Space, 5 ins. and under,	\$1.25
" " " over 5 "	1.50

In ordering Springs, send the following dimensions: Diameter of Cylinder, Thickness of Packing Rings, Depth and Width of Packing Space.

## SAUNDERS' CORRUGATED METALLIC PACKING.

This Packing is now in general use on ocean steamers, railroads, and stationary engines throughout the country. It has also been thoroughly tested by a heavy pressure of steam that no other packing could withstand. For steam heating pipes, steam engines, water pipes, gas pipes and pipes of every description it has no equal. The joints will not leak and the gasket will not burn out, neither can it be blown out. It will last as long as the material that it connects.

Price, in bbls. of 25 lbs. each or less, per lb., \$1.00

## CORRUGATED METALLIC GASKETS OR RINGS.

All sizes, prices on application.

## PHOENIX PACKING.



Fig. 910.

## HEMP CORE.

Size.. inch,  $\frac{1}{4}$  to  $\frac{5}{8}$   $\frac{3}{4}$  to  $1\frac{1}{8}$   $1\frac{1}{2}$  to 2 2 and larger.  
Per pound, \$0.60 .50 .75 1.00  
Gum Core, all sizes..... per lb., \$0.80  
This Packing furnished on spools of 1, 2, 5, 10, 25 or 40 pounds.

## PATENT PACKING.

Silver Lake Soapstone.....	per lb., \$0.25
Soapstone .....	.20
Eagle .....	.20
Lion .....	.20
American, Cotton Core.....	1.00
Improved American, Hemp Core.....	.60
Empire, Gum Core .....	.50
Manhattan XXX.....	1.00
" XX .....	.50
Jenkins' Valve Stem.....	.80
Enterprise .....	.85

## ASBESTOS.

Steam Rope Packing.....	per lb., \$0.45
Lubricated Rope Packing.....	.45
Refined Fibre, 1st quality.....	.25
" " 2d .....	.20
Wick Packing.....	.45
Mill Board or Flat Packing.....	.20
Gaskets, regular shapes.....	.60
Rings & Washers, 3 in. dia. and less,	1 20

## PACKING HOOK.



Fig. 915.

Wrought Iron.....each, \$0.50

## MARTIN'S PATENT PACKING RING.

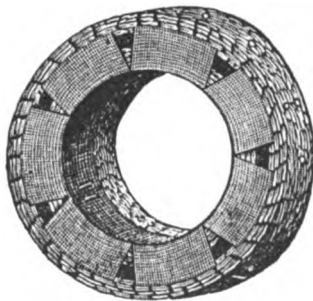


Fig. 908.

Price, per pound..... \$1.25

In ordering, send diameter of the Rod and the inside of Packing Box.

## GUM PACKING,

## With Cloth Insertion, or Cloth on One or Both Sides.

Thickness.	One Ply.	Two Ply.	Three Ply.	Four Ply.
$\frac{1}{4}$ in., per lb., \$0.70				
$\frac{3}{8}$ " " .65				
$\frac{1}{2}$ " " .60	.63	.66		
$\frac{5}{8}$ " " .55	.58	.61		
$\frac{3}{4}$ " " .55	.58	.61	.61	
$1\frac{1}{4}$ " " .55			.58	
$1\frac{1}{2}$ " " .55			.55	.55

One Ply of cloth for every  $\frac{1}{8}$  inch thickness.  
Three cents additional per pound will be charged for each extra ply of cloth. Each cloth, whether insertion or on outside, to count as one ply.

Gum Packing with wire insertion kept in stock  $\frac{1}{8}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$  thick. Other sizes made to order at short notice. List same as for cloth insertion packing.  
Pure Sheet Packing or Valve Gum..... per lb., \$1.40  
Pure Valves, Gaskets and Rings..... 1.50

## TUCK'S PACKING.

Round and Sq. Piston Pkg. best Cotton Duck, per lb., \$0.85  
Square Piston Packing, with Elastic Back .... 1.00

## SELDEN PATENT PACKING.

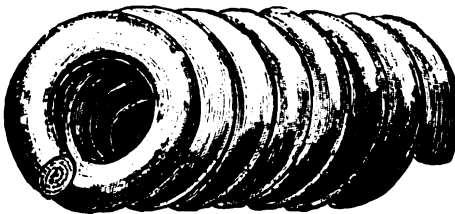


Fig. 911.

Plain (or Canvas Core)..... per lb., \$0.50  
Rubber Core ..... .60 |

## EUREKA FLAT GUM CORE PACKING.

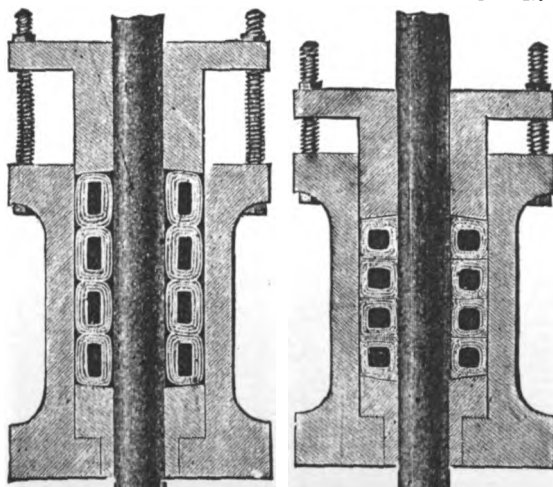


Fig. 913.

Sectional View of Stuffing Box, showing packing when first applied.



Fig. 914.

Sectional View of Stuffing Box, showing how the packing operates.

Price..... per lb., \$0.75

The peculiar feature of the Eureka Packing is the flat gum core of pure rubber, which expands or squares as soon as the gland is partly screwed up. It is made of the best material, is elastic, pliable, and does not become hard by use. The flat gum core is covered with a series of braids of fine flax, between which is placed a lubricative compound superior to anything ever before used for the purpose, containing nothing that will cut, flute or gum the rods, no matter how long run.

## LASHER'S PATENT PACKING SPRING.

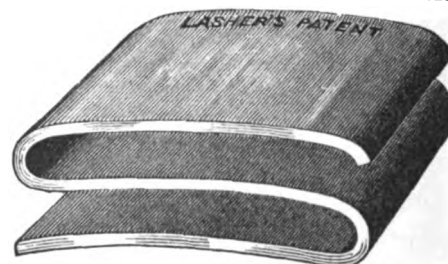


Fig. 909.

## Prices per Inch of Diameter of Cylinder.

	Per Inch.
Depth of Packing Space, 5 ins. and under,	\$1.25
" " " over 5 "	1.50

In ordering Springs, send the following dimensions: Diameter of Cylinder, Thickness of Packing Rings, Depth and Width of Packing Space.

## FIBROUS GASKETS OR RINGS.

Thickness.	per lb.,	\$0.90
$\frac{1}{8}$ inch or less.....		.80
$\frac{3}{8}$ inch and upwards.....		

## CLOTH INSERTION GASKETS &amp; RINGS

Thickness.	per lb.,	\$0.90
$\frac{1}{8}$ inch or less.....		.80
$\frac{3}{8}$ inch and upwards.....		

There is one ply of cloth to every  $\frac{1}{8}$  inch thickness.

Five cents per pound additional, will be charged for each extra ply of cloth.

## SELF VULCANIZING PACKING.

Usdurian .....	per lb., \$0.80
Asbago .....	.80
Salamander .....	.80
Kept in stock in sheets, $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{3}{8}$ , $\frac{1}{2}$ , $\frac{5}{8}$ , $1\frac{1}{8}$ , $1\frac{1}{2}$ , and $2$ of an inch thick. Other sizes, Gaskets, Rings, etc., furnished at short notice.	

Scraps of Packing may be returned at full value, less cost of rerolling.

## TUPPER'S SQUARE FLAX PACKING.

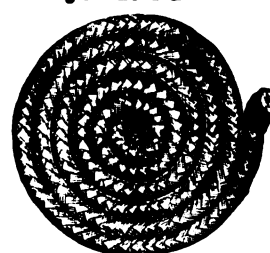


Fig. 912.

Per pound ..... \$0.85  
This Packing is made of pure flax, braided square, and is perfectly adapted to all steam and water purposes.

## COMMON PACKING.

Italian Flax .....	per lb., \$0.30
Italian Hemp A.....	.25
" " B.....	.20
Russia " .....	.25
American " 1 .....	.20
" " 2 .....	.18
Jute.....	.12
Cotton .....	.30
Lamp Wick, in balls.....	.30
Oakum, Best.....	.12
" Navy.....	.11

## WOOL PACKING WASTE.

No. 1 .....	per lb., \$....
" 2 .....	....

## MACHINERY WASTE.

No. 1, Cop .....	per lb., \$....
" 1, " Machined .....	....
" 2, " " .....	....
" 1, Colored, " .....	....
" 2, " " .....	....

## PACKING SCREW.



Fig. 916.

Wrought Iron.....each, \$0.50

**ASBESTOS REMOVABLE COVERING,**

For Steam Pipes, Water Pipes, etc.

This covering is made in sections three feet in length, to fit any size of pipe, with the necessary covering for elbows, tees and valves.

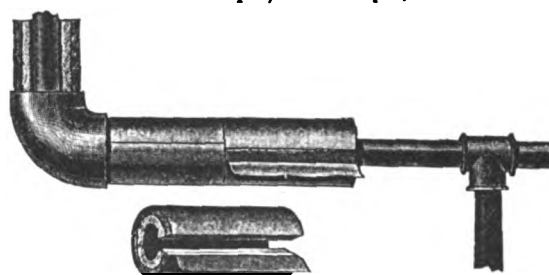


Fig. 917.

It is the lightest Removable Covering manufactured. It can be applied by any one; will not crack or crumble, and can be applied while the pipes are hot or cold.

It is made in two leading styles or grades, viz.: No. 1 and No. 4.

No. 1 consists of an inside of Asbestos mill board, then alternate layers of Asbestos mill board and a patented non-conducting material to the thickness of about seven-eighths inch, with a covering of non-porous sheathing, finished with an outside of heavy olive duck.

No. 4 consists of an inside of Asbestos mill board, then about seven-eighths inch of a patented non-conducting material, with a covering of non-porous sheathing, finished with an outside of heavy olive duck.

Price, No. 1, per lineal foot, regular sizes of pipe.

Sizes, inches...	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6
Per foot.....	\$0.23	.23	.23	.23	.25	.28	.32	.36	.40	.42	.46	.50	.56

Price, No. 4, per lineal foot, regular sizes of pipe.

Sizes, inches...	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6
Per foot.....	\$0.20	.20	.20	.20	.22	.24	.28	.31	.35	.37	.40	.44	.50

**ASBESTOS AND HAIR FELT COMBINATION COVERING,**

For Steam Pipes, Water Pipes, etc.

This consists of—First, an inside lining next the iron of one or more thicknesses of sheet or roll Asbestos, as may be required. Second, a thickness of Hair Felt. Third, a thickness of heavy felting paper. Fourth, an outside covering of heavy canvas.

Price, for Materials, Complete.

Per square foot.....	\$0.20
----------------------	--------

Price, per lineal foot, regular sizes of pipe.

3/4 in.	1 in.	1 1/2 in.	2 in.	2 1/2 in.	3 in.	3 1/2 in.	4 in.	5 in.	6 in.
\$0.16	.17	.20	.22	.25	.29	.32	.34	.40	.45

**ASBESTOS LOCOMOTIVE FELT.**

To meet the demand for a removable covering which should be thoroughly fire-proof and suitable for use under a metallic or wooden jacket on steam cylinders, locomotive and marine boilers, etc., I offer the Asbestos Locomotive Felt, which consists of large strands of pure Asbestos, matted together so as to form a light porous covering, ranking high as a non-conductor. Unlike the ordinary hair felting it cannot char, and it can therefore be used under a jacket of wood or metal for an indefinite time without injury to the covering. It is easily applied, and is applicable to any heated surface. It is made in rolls 30 feet in length, 36 inches wide. Per square foot.....\$0.20

**ASBESTOS HAIR FELT.**

This article is composed of Asbestos, with a small admixture of hair made into a felt, which possesses very considerable non-conducting advantages over ordinary hair felt, and owing to the large amount of Asbestos it is practically fire-proof. It is made in rolls about 100 feet in length, 36 inches wide. Per square foot.....\$0.12

**HAIR FELT.**

For covering boilers, steam and water pipes, lining refrigerators and other non-conducting purposes, deadening sound, etc.  
Best quality—per square foot.....1/2 inch, \$0.05      3/4 inch, \$0.06      1 inch, \$0.07 1/2

**ASBESTOS CEMENT FELTING.**

For Steam Pipes, Boilers, Flues and other large Heated Surfaces.

The Asbestos Cement Felting is supplied either wet or dry. For distant markets and export I am now manufacturing a very superior quality of dry Cement Felting, which possesses peculiar advantages in being very light, each barrel weighing but about one hundred and fifty pounds, thus affecting a very large saving in freight as well as convenience in handling, besides being very light upon the pipes and heated surfaces covered, at the same time giving good results as a non-radiator. It can be applied by any mason or plasterer.

Asbestos Cement Felting (ordinary steam).....per barrel, \$4.50      Asbestos Cement Felting (hot blast).....per barrel, \$6.00

**CHAMPION BOILER AND TUBE COMPOUND.**

For the removal and prevention of Steam Boiler Incrustation, Foaming and Leaking.

The Champion Compound is the only preparation ever discovered that will successfully remove all the scale from steam boilers, prevent its formation, and at the same time preserve the iron entirely from pitting and corrosion. Its use will save fuel and lessen danger of explosion. Per gallon.....\$1.00

**EUREKA PATENT LUBRICATING COMPOUND AND CARTRIDGES.**

This Lubricant is unsurpassed for cylinder and valve faces, piston rings, or other surfaces working under heavy pressure or high steam. It leaves no grit or deposit of any kind, either in receivers' pipes, condensers or boilers. 1 ounce compound equals 1 pint best oil.

CARTRIDGES.—For cylinder and valve faces I make a plain lubricating cup to hold one or more cartridges, according to size of engine. Place cartridge in lubricator, and regulate the feed to suit circumstances. For journals use the same as tallow or other grease.

COMPOUND.—Made in six grades adopted to all automatic grease cups and any lubricating purpose. No. 0 melts at 140° F.; No. 1 melts at 120° F.; No. 2 melts at 110° F.; No. 3 melts at 100° F.; No. 4 melts at 90° F.; No. 5 melts at 80° F. This is the only lubricant that can be put on a very hot journal with effect.

Those using the Compound or Cartridges will find, after a short time, that the wearing parts become enameled, and will require much less lubrication than at first.

Prices, put up in 10 pound tins.

Cartridges.....	per pound, \$0.50	Compound.....	per pound, \$0.30
-----------------	-------------------	---------------	-------------------

**DIXON'S DRY AMERICAN GRAPHITE PERFECT LUBRICATOR.**

Dixon's water-dressed Dry Foliated American Graphite is a little thin flake of graphite of extraordinary properties. It has unrivalled smoothness and endurance. Its superiority as a lubricant has been attested by all recent writers on friction. Its coefficient of friction is very low. Its enduring qualities are several times greater than those of any oil. Unlike either oil or grease, it is not affected by heat, cold, steam, acids, etc., and acts equally well under the most varying conditions of temperature and moisture.

Prices.

1 lb. paper cans.....each,	\$0.20	5 lb. tin cans, screw top.....each,	\$0.85	25 lb. boxes.....per lb.,	\$0.14	100 lb. kegs.....per lb.,	\$0.12
5 " " ".....	.80	10 " " ".....	1.60	50 " " ".....	.13	300 " barrel.....	.10

**DIXON'S GRAPHITE CAR GREASE.**

This Grease is unequalled for freight cars, passenger cars, ore cars, coal cars, coke cars, and is specially useful for hot boxes. It is a perfect lubricant, possesses a good body, absolute purity, and durability and smoothness.

No. 675, for freight cars.

No. 676 for passenger cars.

No. 677 for hot boxes.

Prices on application.

## OILS, GREASE, ETC.

Mason's Sperm Oil, Cylinder, Gas Engine, Neutral Spindle, Double and Single Distilled Paraffine, Saponifying Wood Oils, also Signal Oils.



Natural Reduced and Compound Lubricating Oils, both dark and light.

All kinds of Fatty and Seed Oils, and Tallow for soap makers' use.

Fig. 918.

	Per gal.		Per gal.		Per gal.		Per gal.
A Cylinder Oil, compound.....	\$	***Dark Winter Engine Oil.....	\$	No. 2 Wool Oil.....	\$	Sewing Machine Oil.....	\$
B " " ".....		" " ".....		B. W. Sperm Oil.....		Boiled Linseed Oil.....	
C " " ".....		Natural W. Va. Rock Oil.....		B. W. Whale Oil.....		Raw " ".....	
L " " ".....		Zero Natural Lub'g Oil.....		Mason's Ex. Sperm Oil.....		Ex. Winter Signal Oil.....	
2d Grade Gas Engine Oil.....		H'y Summer Black Oil.....		Mason's Sperm Oil.....		No. 1 " ".....	
H'y Mach'y Oil, Loco's & S'boats		Winter Black Oil.....		Ex. Winter Lard Oil.....		Mineral Sperm Burn'g, 300° F. test.....	
H'y Neutral Spindle Oil.....		Winter White Cotton Seed Oil..		Prime Lard Oil.....		Mystic Refined H'dlight, 150° F. ".....	
Neutral Spindle 25° D. D.....		" Yellow " ".....		Ex. No. 1 " ".....		Amber Cylinder Oil.....	
" 28° D. D.....		Summer " ".....		No. 1 " ".....		Amber Lubrication Oil.....	
Paraffine Oil, 25° S. D.....		Prime Crude Cotton Seed Oil..		No. 2 " ".....		Smith Ferry Oil.....	
" 28° S. D.....		Repressed Sap'd Red Oil.....		Extra Neatsfoot Oil.....		Graphite Grease..... per lb.,	
Paraffine Wax..... per lb.,		Single Pressed " ".....		No. 1 Tallow Oil, D. P. City..		Axle Grease..... " "	
		Saponifying Wool Oil.....		Tallow Oil, S. P.....			

Special prices quoted on application.

## T. N. MOTLEY'S AXLE GREASE.

In 5 lb. cans.....	per lb., \$0.12
In kegs.....	" .09
In barrels.....	" .08

## GREASE.

Engine, Shafting, Elevator and Gear Grease. Prices on application.

## BENZINE, NAPHTHA &amp; GASOLINE.

Prices quoted on application.

## TAR, PITCH AND ROSIN.

Prices quoted on application.

## TURPENTINE AND WHITE LEAD.

Prices quoted on application.

## PAINTS AND VARNISHES.

Prices quoted on application.

## RED LEAD.

Dry.....	per lb., \$	In Oil.....	per lb., \$
----------	-------------	-------------	-------------

## TRIPOLI.

American.....	per lb., \$	German.....	per lb., \$
---------------	-------------	-------------	-------------

## GROUND GLASS.

For Grinding Valves.....	per lb., \$
--------------------------	-------------

## EMERY AND CORUNDUM.

## EMERY.

Pure Turkish, cleaned and evenly graded—the best in the market.

Nos. 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, 30, 36, 40, 46, 54, 60, 70, 80, 90, 100, 120, 140, 160, CF, F, FF, FFF.

Packed in kegs of about 300 pounds, half kegs of about 135 pounds, and quarter kegs of about 85 pounds, also in 50 pound bags and 10 pound cans.

Special prices on application.

## SAND AND EMERY PAPER, EMERY CLOTH AND SAND CLOTH.

## "FLINT" SAND PAPER.

Nos.....	00	0	1 <sub>2</sub>	1
Per ream.....	\$4.50	4.50	4.50	4.50
Nos.....	1 <sub>2</sub>	2	2 <sub>1</sub> <sub>2</sub>	3
Per ream.....	\$4.50	5.00	5.00	5.00

## "STAR" SAND PAPER.

Nos.....	00	0	1 <sub>2</sub>	1
Per ream.....	\$3.75	3.75	3.75	3.75
Nos.....	1 <sub>2</sub>	2	2 <sub>1</sub> <sub>2</sub>	3
Per ream.....	\$3.75	3.75	3.75	3.75



Fig. 919.

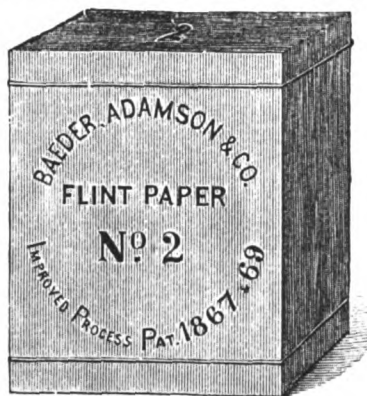


Fig. 920.

## EXTRA "FLINT" PAPER.

In rolls of 50 yards each.

23 1/2 inches wide.				30 inches wide.				36 inches wide.				40 inches wide.			
Nos. 00 to 1 1/2.....	per roll, \$5.00	Nos. 00 to 1 1/2.....	per roll, \$8.00	Nos. 00 to 1 1/2.....	per roll, \$10.00	Nos. 00 to 1 1/2.....	per roll, \$12.00	Nos. 00 to 1 1/2.....	per roll, \$10.00	Nos. 00 to 1 1/2.....	per roll, \$15.00	Nos. 00 to 1 1/2.....	per roll, \$10.00	Nos. 00 to 1 1/2.....	per roll, \$10.00
" 2.....	" 5.50	" 2.....	" 9.00	" 2.....	" 11.00	" 2.....	" 13.00	" 2.....	" 15.00	" 2.....	" 17.00	" 2.....	" 13.00	" 2.....	" 13.00
" 2 1/2.....	" 6.00	" 2 1/2.....	" 10.00	" 2 1/2.....	" 12.00	" 2 1/2.....	" 14.00	" 2 1/2.....	" 16.00	" 2 1/2.....	" 18.00	" 2 1/2.....	" 14.00	" 2 1/2.....	" 14.00
" 3.....	" 6.50	" 3.....	" 11.00	" 3.....	" 13.00	" 3.....	" 15.00	" 3.....	" 17.00	" 3.....	" 19.00	" 3.....	" 15.00	" 3.....	" 15.00
" 3 1/2.....	" 7.50	" 3 1/2.....	" 13.00	" 3 1/2.....	" 15.00	" 3 1/2.....	" 17.00	" 3 1/2.....	" 19.00	" 3 1/2.....	" 21.00	" 3 1/2.....	" 17.00	" 3 1/2.....	" 17.00
" 4.....	" 8.50	" 4.....	" 15.00	" 4.....	" 17.00	" 4.....	" 19.00	" 4.....	" 21.00	" 4.....	" 23.00	" 4.....	" 19.00	" 4.....	" 20.00

## EMERY PAPER.

Rolls of 50 yds. ea., 23 1/2 ins. wide.	
Nos. 00 to 1 1/2.....	per roll, \$6.50
" 2.....	" 7.50
" 2 1/2.....	" 9.00
" 3.....	" 11.50

## EMERY CLOTH—Rolls of 50 yards each.

9 inches wide.				18 inches wide.			
Nos. 00 to 1 1/2.....	per roll, \$7.50	Nos. 00 to 1 1/2.....	per roll, \$15.00	Nos. 00 to 1 1/2.....	per roll, \$15.00	Nos. 00 to 1 1/2.....	per roll, \$15.00
" 2.....	" 9.00	" 2.....	" 18.00	" 2.....	" 21.00	" 2.....	" 21.00
" 2 1/2.....	" 10.50	" 2 1/2.....	" 21.00	" 2 1/2.....	" 23.00	" 2 1/2.....	" 23.00
" 3.....	" 12.50	" 3.....	" 25.00	" 3.....	" 25.00	" 3.....	" 25.00

## SAND CLOTH.

Rolls of 50 yds. ea., 14 ins. wide.	
Nos. 00 to 1 1/2.....	per roll, \$10.00
" 2.....	" 10.00
" 2 1/2.....	" 12.50
" 3.....	" 12.50

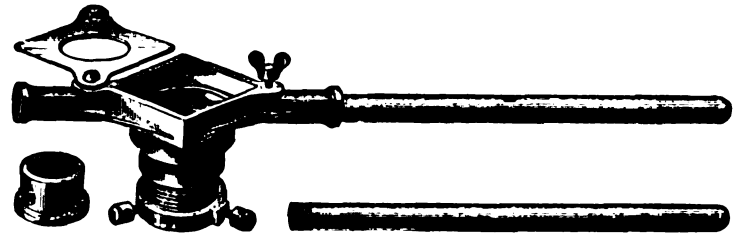
## Comparative Numbers of Emery.

Baeder, Adamson & Co.'s numbers.....	00	0	100	1 <sub>2</sub>	1	1 1/2	2	2 1/2	3
English numbers.....	Flour	120	100	90	80	70	60	54	46

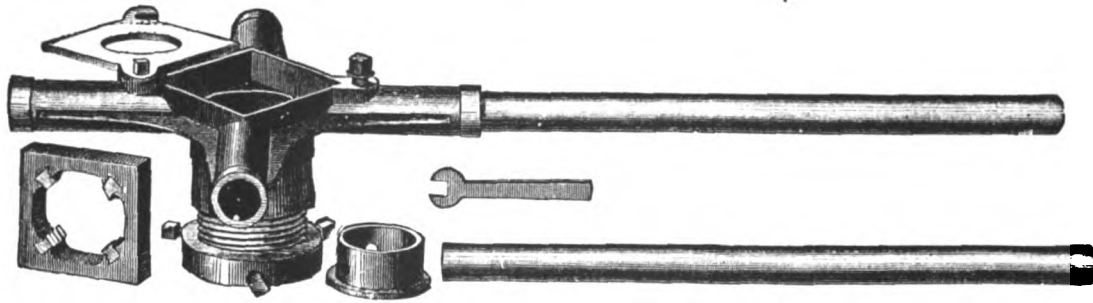


**PIPE STOCKS WITH LOOSE HANDLES AND SOLID DIES FOR THREADING IRON PIPE.**

### STYLE OF STOCK, No. 3.



**Fig. 923.**



## DIE HOLDER.



**Fig. 926.**

	Each.		Each.
No. 1 stock, with dies 2 inches square by $\frac{1}{2}$ inch, to cut $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{3}{8}$ and $\frac{1}{2}$ inch pipe	\$6.50	No. 5 stock, with dies $7\frac{1}{2}$ inches octagon by $1\frac{1}{2}$ inch, with leader screw, to cut $2\frac{1}{2}$ , 3, $3\frac{1}{2}$ and 4 inch pipe	\$85.00
No. 1 $\frac{1}{2}$ stock, with dies $2\frac{1}{2}$ inches square by $\frac{3}{4}$ inch, to cut $\frac{1}{4}$ , $\frac{3}{8}$ , $\frac{1}{2}$ and 1 inch pipe	10.00	Extra guides for No. 1, ea. \$0.20; No. 1 $\frac{1}{2}$ and 2, ea. \$0.25; No. 2 $\frac{1}{2}$ , ea. \$0.30; No. 2 $\frac{3}{4}$ , ea. \$0.40; No. 3, ea. \$0.50; No. 4, ea. \$1.00; No. 5, ea.	1.50
No. 2 stock, with dies 3 inches square by $\frac{3}{4}$ inch, to cut $\frac{3}{4}$ and 1 inch pipe	8.00	Extra die holders for Nos. 2 $\frac{1}{2}$ and 2 $\frac{3}{4}$ stock, outside size 3 inches square by $\frac{3}{4}$ inch, to hold $\frac{1}{4}$ , $\frac{3}{8}$ and $\frac{1}{2}$ inch dies, 2 inches square by $\frac{1}{2}$ inch	.40
No. 2 $\frac{1}{2}$ stock, with dies 3 inches square by $\frac{3}{4}$ inch, to cut $\frac{3}{4}$ , 1 and $1\frac{1}{4}$ inch pipe	10.00	Extra die holder for No. 3 stock, outside size 4 inches square by 1 inch, to hold $\frac{3}{4}$ and 1 inch dies, 3 inches square by $\frac{3}{4}$ inch	.50
No. 2 $\frac{3}{4}$ stock, with dies 3 inches square by $\frac{3}{4}$ inch, to cut 1, $1\frac{1}{4}$ and $1\frac{1}{2}$ inch pipe	12.00	Extra die holder for No. 4 stock, outside size 5 inches square by $1\frac{1}{4}$ inch, to hold dies 4 by 1 inch steel	1.00
No. 3 stock, with dies 4 inches square by $\frac{3}{4}$ inch, with leader screw, to cut $1\frac{1}{4}$ , $1\frac{1}{2}$ and 2 inch pipe	15.00	Extra die holder for No. 5 stock, outside size $7\frac{1}{2}$ inches octagon by $1\frac{1}{2}$ inches, to hold dies 5 by $1\frac{1}{4}$ inches	1.50
No. 3 stock, with dies 4 inches by 1 inch, with leader screw, to cut $1\frac{1}{4}$ , $1\frac{1}{2}$ and 2 inch pipe	10.00		
No. 3 patent stock, with dies 4 inches square by 1 inch, with leader screw, to cut $1\frac{1}{4}$ , $1\frac{1}{2}$ and 2 inch pipe	18.00		
No. 4 stock, with dies 5 inches square by $1\frac{1}{4}$ inch, with leader screw, to cut $2\frac{1}{2}$ and 3 inch pipe	40.00		

Sizes of Dies.	Each.	Sizes of Dies.	Each.
1 <sub>8</sub> , 1 <sub>4</sub> , 3 <sub>8</sub> , 1 <sub>2</sub> inch, 1 <sup>3</sup> / <sub>8</sub> inches square by 1 <sup>1</sup> / <sub>2</sub> inch, for No. 0 stock.....	\$1.00	1 <sub>2</sub> , 3 <sub>4</sub> , 1, 1 <sup>1</sup> / <sub>4</sub> , 1 <sup>1</sup> / <sub>2</sub> inches, 3 inches square by 7 <sup>1</sup> / <sub>8</sub> inch, for No. 2 <sup>3</sup> / <sub>4</sub> stock.....	\$2.25
1 <sub>8</sub> , 1 <sub>4</sub> , 3 <sub>8</sub> , 1 <sup>1</sup> / <sub>2</sub> inch, 2 inches square by 1 <sup>1</sup> / <sub>2</sub> inch, for No. 1 stock.....	1.00	3 <sub>4</sub> , 1, 1 <sup>1</sup> / <sub>4</sub> , 1 <sup>1</sup> / <sub>2</sub> , 2 inches, 4 inches square by 7 <sup>1</sup> / <sub>8</sub> inch for No. 3 stock.....	3.00
1 <sub>8</sub> , 1 <sub>4</sub> , 3 <sub>8</sub> , 1 <sup>1</sup> / <sub>2</sub> , 3 <sub>4</sub> , 1 inch, 2 <sup>1</sup> / <sub>4</sub> inches square by 3 <sup>1</sup> / <sub>4</sub> inch, for No. 00 stock.....	1.50	3 <sub>4</sub> , 1, 1 <sup>1</sup> / <sub>4</sub> , 1 <sup>1</sup> / <sub>2</sub> , 2 inches, 4 inches square by 1 inch, for No. 3 stock.....	3.25
1 <sub>8</sub> , 1 <sub>4</sub> , 3 <sub>8</sub> , 1 <sup>1</sup> / <sub>2</sub> , 3 <sub>4</sub> , 1 inch, 2 <sup>1</sup> / <sub>2</sub> inches square by 3 <sup>1</sup> / <sub>4</sub> inch, for No. 1 <sup>1</sup> / <sub>2</sub> stock.....	1.50	2 <sup>3</sup> / <sub>4</sub> , 3 inches, 5 inches square by 1 <sup>1</sup> / <sub>4</sub> inches, No. 4 stock.....	10.00
1 <sub>2</sub> , 3 <sub>4</sub> , 1, 1 <sup>1</sup> / <sub>4</sub> inch, 3 inches square by 3 <sup>1</sup> / <sub>4</sub> inch, for Nos. 2 and 2 <sup>1</sup> / <sub>2</sub> stock.....	2.00	3 <sup>1</sup> / <sub>2</sub> , 4 inches, 7 <sup>1</sup> / <sub>2</sub> inches octagon by 1 <sup>1</sup> / <sub>2</sub> inches, for No. 5 stock.....	18.00

The frames of 2½, 3, 3½ and 4 inch Dies are of malleable iron, with Cutters set in.

## SOLID PLATE AND DIE STOCK



**Fig. 928.**

No. 0 cuts $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{3}{8}$ and $\frac{1}{2}$ inch.....	each, \$8.00	No. 1, cutting $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{3}{8}$ and $\frac{1}{2}$ inch.....	each, \$6.50
(0 cuts $\frac{1}{2}$ , $\frac{3}{4}$ and 1 inch.....	" 9.00	" 2, cutting $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{3}{8}$ , $\frac{1}{2}$ and 1 inch.....	" 12.50
Extra Dies, right or left, for No. 0 Stock.....	" 1.00	Extra Plates cutting $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{3}{8}$ and $\frac{1}{2}$ inch, for No. 1 Stock.....	" 4.00
OO.....	" 1.00	" 1, $\frac{1}{8}$ , $\frac{1}{4}$ and $\frac{3}{8}$ inch, " 2.....	" 5.85
		" 2, $\frac{1}{4}$ and 1 inch, " 3.....	" 7.50

## JARECKI SCREW PLATE AND PIPE CUTTER.



**Fig. 929.**

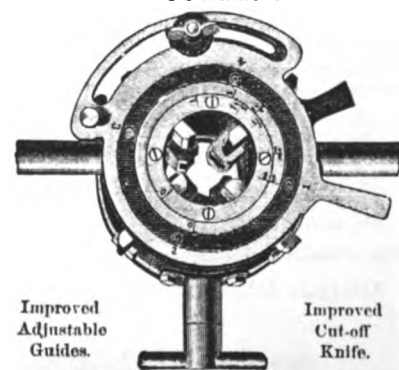
For threading brass pipe of all sizes, from  $\frac{1}{8}$  to  $\frac{1}{2}$  inch.  
Each .....\$10.00

**Fig. 929.**

Numbers.....	1	2	3	3½	4	5
Extra Dies, per set, right or left.....	\$1.50	1.75	2.00	2.00	3.50	4.00
Extra Knives..... each.....	.50	.50	.50	.50	.75	.75

**Fig. 0:31.**

Numbers .....	1	2	3	3½	4A	4B	5
Extra Dies, per set, right or left .....	\$2.00	2.00	2.00	4.00	3.00	3.00	6.00
Extra Knives .. each,	.40	.40	.40	.40	.50	.50	1.00



**Fig. 931.**

No. 1 cuts and threads	1, 3, 5, 7 inch	each, \$14.00
" 2	2, 3, 1, 1 1/2	" 16.00
" 3	1, 1 1/4, 1 1/2, 2"	" 20.00
" 3 1/2	3, 3 1/4, 1 1/2, 2 ins.	" 22.50
" 4A	1 1/2, 2 1/2, 3 inches	" 35.00
" 4B	2 1/2, 3 3/4, 4 "	" 50.00
" 5	4 1/2, 5, 6 inches	" 75.00



## PIPE STOCKS, DIES AND TAPS.

## LIGHTNING PIPE STOCK AND DIES.

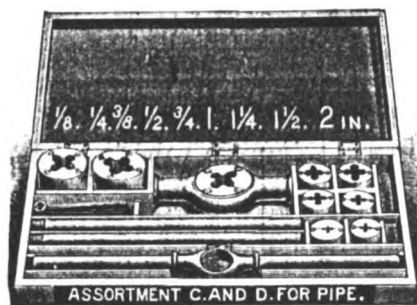


Fig. 932.

C and D Sets Combined, 9 sizes, with dies, right or left, $\frac{1}{8}$ in. to 2 ins.,	Per set, \$43.50
C set, 6 sizes, with dies, right or left, $\frac{1}{8}$ in. to 1 in.	17.00
D set, 3 sizes, with dies, right or left, $1\frac{1}{4}$ ins. to 2 ins.	26.50

## ADJUSTABLE PIPE STOCK AND DIES.

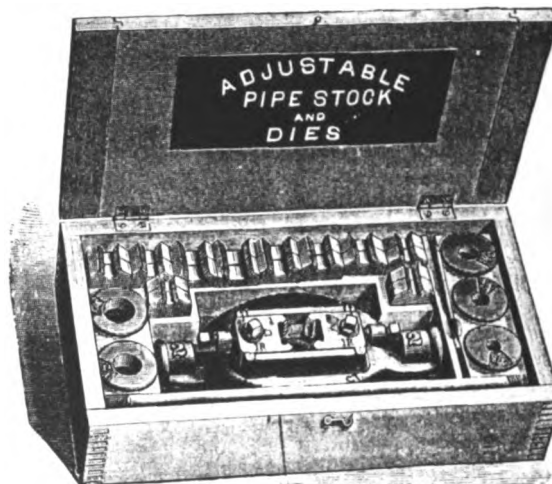


Fig. 933.

ADJUSTABLE STOCKS AND DIES FOR THREADING IRON AND BRASS PIPE, Fig. 933.					
No. 1 Stock, 4 right or left dies, $\frac{1}{8}$ to $\frac{1}{2}$ inch	per set, \$	9.00	No. 6 Stock, with dies, $2\frac{1}{2}$ and 3 inches	per set, \$	40.00
" 1 $\frac{1}{2}$ " 4 each, right and left dies, $\frac{1}{8}$ to $\frac{1}{2}$ inch	"	14.00	" 7 " " " $2\frac{1}{2}$ , 3, $3\frac{1}{2}$ and 4 inches	"	60.00
" 2 " 5 right or left dies, $\frac{1}{4}$ to 1 inch	"	12.00	" 2B " " brass dies, $\frac{5}{8}$ , $\frac{3}{4}$ , $\frac{7}{8}$ , 1 and $1\frac{1}{4}$ inches	"	15.00
" 2 $\frac{1}{2}$ " 5 each, right and left dies, $\frac{1}{4}$ to 1 inch	"	19.50	" 2 $\frac{1}{2}$ B " " " and taps $\frac{5}{8}$ , $\frac{3}{4}$ , $\frac{7}{8}$ , 1 and $1\frac{1}{4}$ inch,	"	26.25
" 3 " 4 right or left dies, 1 to 2 inches	"	24.00	These are the only true standard taps and dies for brass tubing.		

## SECTIONAL STOCK AND DIES FOR THREADING IRON PIPE.

No. 4 Sectional Stock, 3 right or left dies, $1\frac{1}{4}$ to 2 inches	per set, \$18.00	No. 4B Sectional Stock, 4 right or left dies, 1 to 2 inches	per set, \$21.00
" 4A " " 3 " and " " $1\frac{1}{4}$ to 2 "	27.00	" 4C " " 4 " and " " 1 to 2 "	33.00
The Sectional Dies are made by inserting small steel cutters in a solid block; they can be used in place of solid dies and will fit any stock that takes dies 4 by 1 inch.			
Block and Cutters, Complete	each, \$3.00	Blocks only	each, \$1.00
Cutters only	per set, \$2.00		

## ADJUSTABLE COMBINATION STOCKS AND DIES FOR THREADING PIPE AND BOLTS.

No. 11 Stock, 4 pipe dies, $\frac{1}{8}$ to $\frac{1}{2}$ in., 7 Bolt Dies, $\frac{1}{4}$ to $\frac{3}{4}$ in., per set, \$20.00	No. 21 Stock, 5 pipe dies, $\frac{1}{4}$ to 1 in., 7 bolt dies, $\frac{1}{2}$ to $1\frac{1}{4}$ in., per set, \$30.00
" 12 " 7 bolt " $\frac{1}{4}$ to $\frac{3}{4}$ inch	" 22 " 7 bolt " $\frac{1}{2}$ to $1\frac{1}{4}$ inches
" 13 " 7 " " and 7 taps, $\frac{1}{4}$ to $\frac{3}{4}$ inch	" 23 " 7 " " and 7 taps, $\frac{1}{2}$ to $1\frac{1}{4}$ inches

The Improved Adjustable Dies furnished with above stocks have a double taper, that is the taper at the entrance for the first few threads is greater in degree than the standard taper, which forms a lead to the dies, causing them to start on the pipe without filing, even when there is a swell or burr, and requiring no pressure to start the dies on the pipe. These Dies being made in parts can be more perfectly constructed and can be sharpened same as any edge tool without drawing the temper.

## FORBES PATENT DIE STOCKS AND PIPE MACHINES.

No. 1, Die Stock.



Fig. 934.

No. 2, Power Machine, Front View.

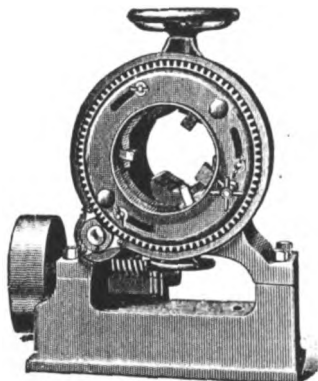


Fig. 935.

No. 2, Power Machine, Back View.

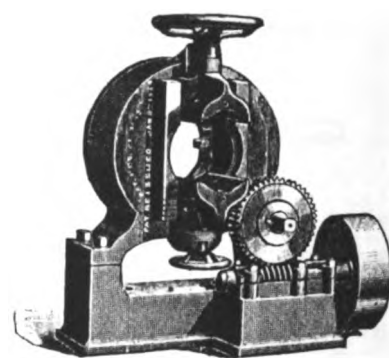


Fig. 936.

These are the most complete machines made for threading and cutting off pipe. No vice is required, as the stock has grip attachment. All machines have cut-off attachment except No. 1. A ratchet wrench which will be found most convenient when cutting off in the middle of a pipe, when cutting and threading in in the ground, and threading the larger size of pipe, also a pipe rest is sent with each stock.

Nos.	Size of Pipe Will Thread	Hand Machines		Power Machines		Nos.	Size of Pipe Will Thread	Hand Machines		Power Machines	
		Weight.	Each.	Weight.	Each.			Weight.	Each.	Weight.	Each.
1	$\frac{1}{4}$ to 2 ins.	60 lbs.	\$50.00			3 B	$2\frac{1}{2}$ to 5 ins.	260 lbs.	\$150.00	370 lbs.	\$200.00
2	$2\frac{1}{2}$ to 4 "	150 "	85.00	230 lbs.	\$140.00	3 $\frac{1}{2}$	$2\frac{1}{2}$ to 6 "			1600 "	350.00
3	4 to 6 "	240 "	115.00	350 "	170.00	4	4 to 8 "			1800 "	500.00
3A	$3\frac{1}{2}$ to 6 "	250 "	130.00	360 "	180.00	5	6 to 12 "			2400 "	1000.00

The power attachments may be easily removed and machine operated by hand when so desired. Prices given for power machine, include countershaft and pulleys.

## PIPE DRILL REAMER AND TAP COMBINED.

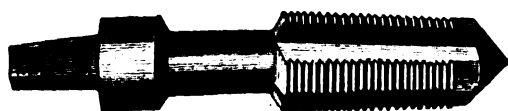


Fig. 937.

Prices, Combined Drill, Reamer and Tap.									
Diameter ins.,	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	
Each	\$2.50	2.50	3.00	4.50	6.00	7.25	8.50	10.75	

## PIPE REAMER.



Fig. 938.

## PIPE TAP.

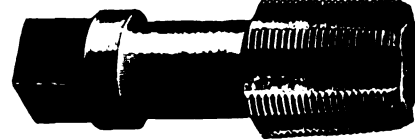


Fig. 939.

Prices, Hand Pipe Taps and Reamers.											
Diameter, ins.,	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Each	\$1.12	1.25	1.50	1.87	2.50	3.12	3.75	4.62	6.25	10.50	15.00

## PIPE CUTTERS AND WRENCHES.

## IMPROVED THREE WHEEL PIPE CUTTER.

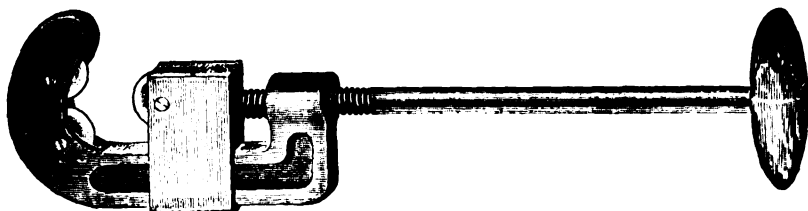


Fig. 940.

This tool will cut off pipe in any place where it can be turned around one-third the circuit of the pipe, thus enabling workmen to reach corners and contracted places otherwise inaccessible. It works quickly and easily, is light and easily adjusted. All parts interchangeable.

## Prices.

Nos.	Cutting Pipe. Inches.	Cutters Complete. Each.	Cutter Wheels. Each.	Wheel Pins. Per dozen.
1	$\frac{1}{8}$ to 1	\$4.50	\$0.25	\$1.00
2	$\frac{1}{2}$ to 2	6.00	.30	1.00
3	$1\frac{1}{2}$ to 3	10.00	.40	1.00
4	3 to 4	20.00	.50	2.00
5	4 to 6	30.00	.75	2.00
6	6 to 8	40.00	.75	2.00

## STANWOOD'S PIPE CUTTER.

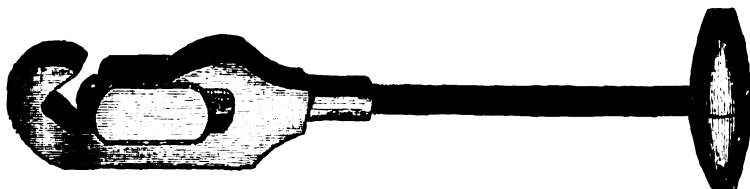


Fig. 942.

Nos.	Cutting Pipe. Inches.	Cutters Complete. Case Hardened. Each.	Cutters Complete. Steel Faced. Each.	Cutter Blocks and Wheels. Each.	Cutter Wheels. Each.
1	$\frac{1}{8}$ to 1	\$1.50	\$1.75	\$0.35	\$0.10
2	1 to 2	2.25	2.50	.50	.15
3	2 to 3	7.00	7.50	.90	.20

## TOOL CUTTER FOR PIPE AND TUBES.

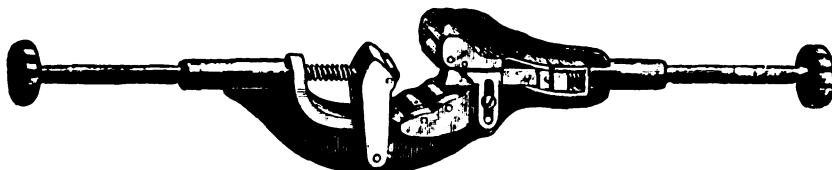


Fig. 944.

Nos.	Cutting Tubes. Inches.	Cutters Complete. Each.	Tools. Each.
1	$\frac{1}{8}$ to 1	\$0.50	\$0.18
2	1 to 2	8.00	.25
3	2 to 3	16.00	.35
4	$2\frac{1}{2}$ to 4	25.00	.45

## COMBINATION WRENCH AND PIPE CUTTER.

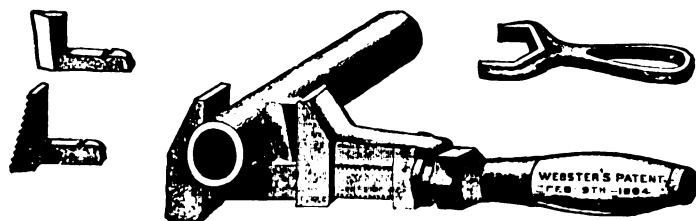


Fig. 946.

This is a very convenient tool, combining in one, a good Screw Wrench, Pipe Wrench and Pipe Cutter.

12 in. Wrench, to cut off and screw up pipe, $\frac{1}{8}$ to $\frac{3}{4}$ in. diam., per doz.,	\$48.00
15 " " " " " " $\frac{1}{8}$ " $\frac{1}{2}$ " " " "	60.00
18 " " " " " " $\frac{1}{8}$ " 2 " " " "	72.00
21 " " " " " " $\frac{1}{8}$ " $2\frac{1}{2}$ " " " "	84.00

## EXTRA CUTTERS AND CLASPS.

Sizes.....inches,	12	15	18	21
Per dozen.....	\$6.00	7.20	8.00	8.50

## EUREKA PIPE CUTTER.



## EXTRA PARTS.



Fig. 941.

The body of this tool is made of thoroughly annealed malleable iron, and is fitted with an adjustable hardened cast steel jaw, which can be renewed at any time by simply removing one screw. The wheel block, wheels and pins are of the best quality of steel.

The Eureka is both the best and cheapest one wheel cutter made.

## Prices.

Nos.	Cutting Pipe. Inches.	Cutters Complete. Each.	Cutter Blocks and Wheels. Each.	Extra Jaws. Each.	Cutter Wheels. Each.	Wheel Pins. Each.
1	$\frac{1}{8}$ to 1	\$3.00	\$0.60	\$0.20	\$0.17	\$0.10
2	$\frac{1}{2}$ to 2	4.50	.90	.30	.24	.10
3	1 to 3	14.00	1.75	.50	.35	.15

## THREE WHEEL PIPE CUTTER.

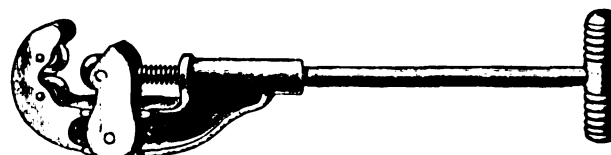


Fig. 943.

Nos.	Cutting Pipe. Inches.	Cutters Complete. Each.	Cutter Blocks and Wheels. Each.	Cutter Wheels. Each.	Wheel Pins. Each.
1	$\frac{1}{8}$ to 1	\$3.00	\$1.25	\$0.24	\$0.10
2	1 to 2	4.50	1.75	.32	.10
3	2 to 3	14.00	3.25	.60	.15

## WHEEL AND ROLLER PIPE CUTTER.

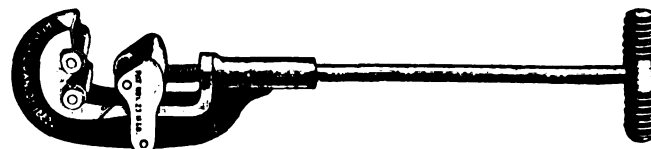


Fig. 945.

Nos.	Cutting Pipe. Inches.	Cutters Complete. Each.	Cutter Blocks and Wheels. Each.	Cutter Wheels. Each.	Rollers, Each.	Wheel Pins, Each.
1	$\frac{1}{8}$ to 1	\$ 3.00	\$1.25	\$0.24	\$0.24	\$0.10
2	1 to 2	4.50	1.75	.32	.32	.10
3	2 to 3	14.00	3.25	.60	.50	.15

## PATENT WRENCH ATTACHMENT.

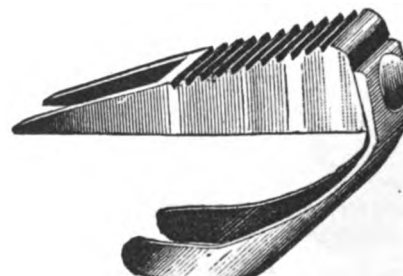


Fig. 947.

This is one of the most convenient attachments for mechanics' use ever invented. It can be applied to a 12 inch Screw Wrench and transforms a common Screw Wrench into a Pipe Wrench. Weighs but  $4\frac{1}{2}$  ounces, and can be applied and removed with ease.

Attachments.....per dozen, \$10.00



ACME COMBINATION WRENCH.

THORNTON N. MOTLEY, AGENT.

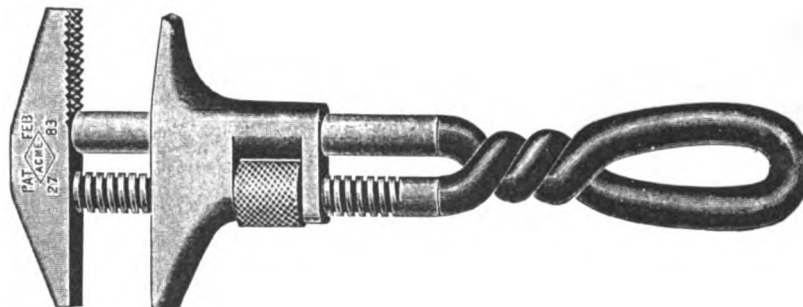


Fig. 952a.

For Pipe, Bolts and Nuts.

This Wrench is very simple in construction, being made of but four pieces, all of which are solid steel, while the common wrench includes from seven to nine parts.

It has no wood handle to split, wear loose or become saturated with oil.

Additional strength is secured by the double slide feature. The thread in the nut is considerably longer than is usual in wrenches, thus lessening the play in the slides and the liability of the nut thread stripping under severe strain.

The pipe jaws catch the pipe at once, and the harder the pressure the tighter the grip. It does not crush the pipe as badly as tongs.

Prices and Capacity.

Length, 10 inches.....	taking pipe $\frac{1}{8}$ to 2 inches.....	per doz., \$24.00
" 12 " .....	" " $\frac{1}{4}$ to 2 $\frac{1}{2}$ " .....	" 30.00
" 15 " .....	" " $\frac{1}{4}$ to 3 $\frac{1}{2}$ " .....	" 36.00

Every Wrench is warranted.

For Acme Machinists' Wrenches see page 17212.





# PIPE WRENCHES, PIPE TONGS AND GAS PLIERS. "ALWAYS READY" WRENCH.

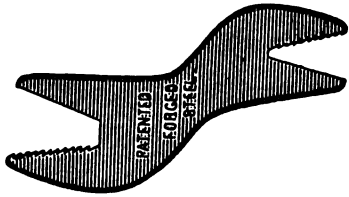


Fig. 959.

## Prices, Always Ready Wrenches.

Forged from prepared steel, tempered in oil and nickel plated.

Numbers.....	1	2	2 1/2	3	4
Holding Pipe.....inches,	1/8 to 3/8	1/8 to 1	1/8 to 1 1/2	1/2 to 1 1/2	Fitting all
Holding Iron.....	1/4 to 3/4	1/4 to 1 1/4	1/4 to 1 3/4	3/4 to 1 3/4	Bicycle Nuts.
Per dozen.....	\$5.00	6.75	10.50	16.00	5.00

## ALLIGATOR PIPE AND NUT WRENCHES. No. 1. Nos. 2 to 5.



Fig. 960.



Fig. 961.

## Prices, Alligator Wrenches.

Numbers.....	1	2	3	4	5
Holding Pipe.....inches,	1/8 to 3/8	3/8 to 1	1/2 to 1 1/4	1 1/4 to 2	2 to 3
Holding Iron.....	1/4 to 3/4	1/2 to 1	3/4 to 1 3/8	1 1/2 to 2 1/2	2 1/4 to 3 1/2
Length.....	5 3/4	10	16	22	27
Per dozen.....	\$4.00	12.00	24.00	36.00	54.00

## BROCK'S PATENT DROP FORGED CHAIN PIPE WRENCHES. Nos. 0 and 1. Nos. 2, 3, 4 and 5.



Fig. 962.

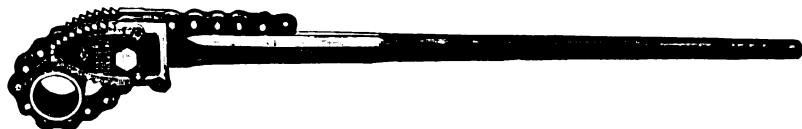


Fig. 963.

This Wrench combines lightness, strength and durability, being made entirely of bar steel. The duplicate jaws are drop-forged, and hardened to a saw temper, that they may be readily sharpened by filing. The pressure of the teeth is in a line tangent to the circumference of the pipe, which, combined with the encircling grip of the chain, absolutely prevents crushing. All parts are interchangeable.

Numbers.....	0	1	2	3	4	5
Holding Pipe.....inches,	1/8 to 3/4	1/8 to 1 1/2	1/4 to 2 1/2	3/4 to 4	1 1/2 to 8	2 to 14
Length.....	12 1/2	20	27	37	50	64
Weight each, pounds.....	11 1/4	4 1/4	8	15	28	47
Price each.....	\$2.50	3.50	5.50	7.50	11.00	18.00

## ROBBINS' CHAIN PIPE WRENCH.

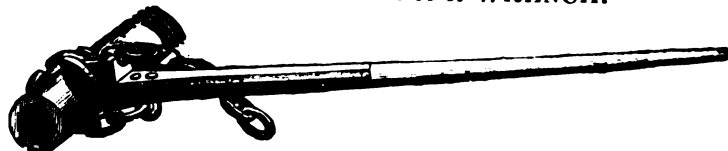


Fig. 964.

Numbers.....	2	3	4	5	6	7
Holding Pipe.....inches,	3/4 to 4	1 to 5	1 1/2 to 7	2 to 8	2 1/2 to 10	3 to 16
Length.....	27	36	48	60	72	84
Weight each, pounds.....	8	13 1/2	21	35	59	125
Price each.....	\$5.50	6.25	9.00	12.50	16.00	30.00

## COMMON PIPE TONGS.



Fig. 965.

Sizes, for pipe.....inches,	1/8	1/4	3/8	1/2	3/4	1
Each.....	\$0.44	.52	.56	.72	.90	1.08
Sizes, for pipe.....inches,	1 1/4	1 1/2	2	2 1/2	3	
Each.....	\$1.30	1.50	1.90	2.50	3.25	

## BROWN'S ADJUSTABLE PIPE TONGS.

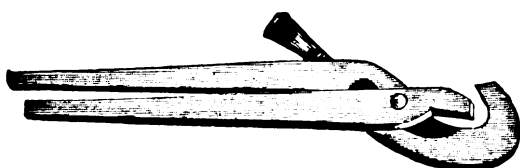


Fig. 966.

No. 1 takes pipe	1/8 to 3/4 inch.....	each, \$1.30
" 1 1/2 "	3/8 to 1 ".....	" 1.65
" 2 "	1/4 to 1 1/4 ".....	" 2.00
" 3 "	1 to 2 ".....	" 3.00
" 4 "	1 1/2 to 3 ".....	" 6.00
" 5 "	2 1/2 to 4 ".....	" 11.00
" 6 "	3 to 5 ".....	" 25.00
" 7 "	4 to 7 ".....	" 35.00

## ACME CUBE PIPE TONGS.



Fig. 967.

These Tongs are simple in construction, easily adjusted and very durable.

No. 1 takes pipe	1/8 to 3/4 inch.....	each, \$3.00
" 1 1/2 "	1/2 to 1 1/4 ".....	" 3.50
" 2 "	1/2 to 1 1/2 ".....	" 4.00
" 3 "	1/2 to 2 1/2 ".....	" 5.00
" 4 "	3/4 to 4 ".....	" 9.00

## JARECKI'S ADJUSTABLE PIPE TONGS.

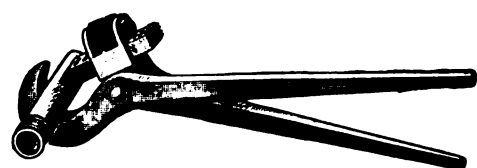


Fig. 968.

Made of the best material, and every pair warranted.

No. 0 takes pipe	1/8 to 3/4 inch.....	each, \$3.00
" 1 "	1/8 to 1 ".....	" 3.50
" 2 "	1/4 to 1 1/2 ".....	" 4.00
" 3 "	1/2 to 2 1/2 ".....	" 5.00
" 4 "	3/4 to 3 1/2 ".....	" 9.00
" 5 "	2 1/2 to 6 ".....	" 16.00

## BARNES' PIPE TONGS.



Fig. 969.

This tool is readily adjustable to any desired size, and its action is instantaneous. It is especially adapted to putting together and taking apart machinery. While holding pipe or other metals firmly, it neither crushes or defaces them.

It has more power than gas pliers, and will do the work where ordinary pliers fail.

No. 1 takes pipe 1/8 to 1 inch.....each, \$2.25

## GAS PLIERS.

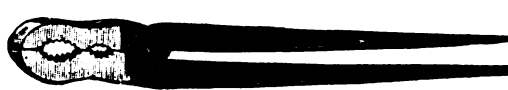


Fig. 970.

Solid cast steel, bright or black.

Length, inches.....	4	5	6	7
Per dozen.....	\$4.80	4.80	6.50	7.40
Length, inches.....	8	9	10	
Per dozen.....	\$8.25	9.25	10.70	
Length, inches.....	11	12	13	
Per dozen.....	\$12.00	13.00	15.00	
Length, inches.....	14	15	16	
Per dozen.....	\$17.00	19.00	21.00	

## COMBINATION GAS PLIERS.



Fig. 971.

This tool is a gas plier, wire cutter, wrench and screw driver combined, and is drop-forged from the best bar steel.

It can be changed instantly by a quarter turn of the handle, and sliding from one hole to another, from size of gas burner to 3/4 inch pipe.

Length.....	Black Finish.	Nickel Plated.
6 1/2 inches.....per doz.,	\$13.50	\$15.00
10 ".....	18.00	21.00

## FLOOR CHISEL—ROUND.



**Fig. 972.**  
Width of Blade, 3 inches.  
15 ins., per doz., \$22.00 18 ins., per doz., \$24.00  
**HALF ROUND NOSE CHISEL.**

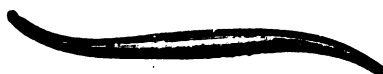


**Fig. 975.**  
Per dozen.....\$6.00  
**ROUND NOSE CHISEL.**



**Fig. 978.**  
Per dozen.....\$6.00

## BENDING PIN.

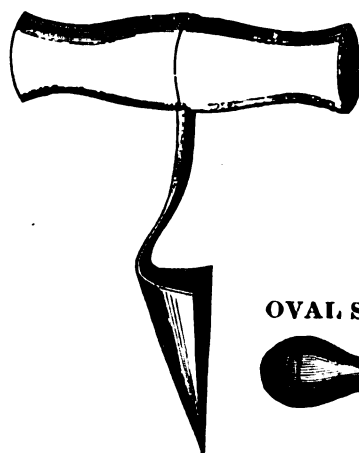


**Fig. 981.**  
Pins, Fig. 981.....per dozen, \$3.50  
One End Straight....." 3.50

## ROUND IRON.

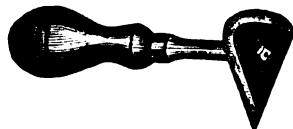


**Fig. 984.**  
No. 1, per doz., \$8.00 No. 2, per doz., \$11.00  
No. 3, per doz.....\$13.00  
**N. Y. PATTERN TAP BORER.**



**Fig. 988.**  
Extra Heavy Shank.  
Per doz.....\$5.00

## OVAL SHAVE HOOK.



**Fig. 989.**  
Per doz.....\$3.50

## DRESSER.

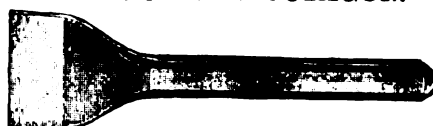


**Fig. 993.**  
Boxwood.....per doz., \$10.00  
Dogwood....." 8.00

## CHIPPING KNIFE.



**Fig. 995.**  
4 1/2 inches.....per doz., \$7.00  
5 "....." 7.00  
6 "....." 7.00

PLUMBERS' TOOLS.  
FLOOR CHISEL—OCTAGON.

**Fig. 973.**  
Width of Blade, 4 inches.  
16 ins. long, per doz., \$22.00

## CAULKING CHISEL.



**Fig. 976.**  
Per dozen.....\$5.00  
**COLD CHISEL.**



**Fig. 979.**  
Length.....ins., 6 8 10 12 16 20  
Per dozen.....\$5.00 6.00 7.25 7.50 11.00 27.00  
**COPPER POINTED BOLT.**



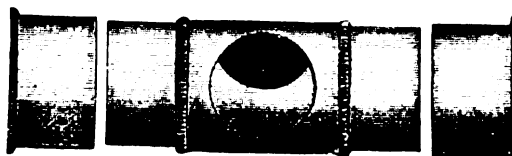
**Fig. 982.**  
Per pound.....\$0.50

## ROOFERS' COPPER BOLT.



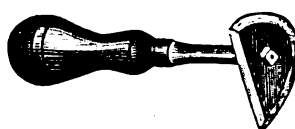
**Fig. 985.**  
Per pound.....\$0.50

## GREASE, ROSIN AND FLOUR BOX.

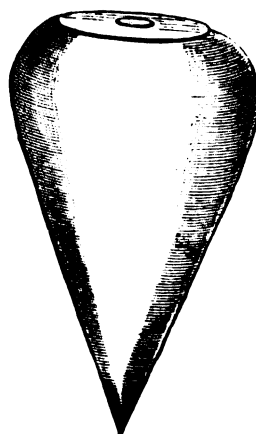


**Fig. 987.**  
Brass..... Small. Medium. Large.  
Per doz... \$15.00 17.00 19.50

## HALF OVAL SHAVE HOOK.



**Fig. 990.**  
Per doz....\$3.50  
**TURN PIN.**



**Fig. 996.**  
Boxwood, Nos. 1, 2, 3.....per doz., \$3.00  
Dogwood or Hickory, Nos. 1, 2, 3, " 1.75

## WOOD CHISEL.



**Fig. 974.**  
14 ins., long, 2 ins. Blade, per doz., \$11.50  
10 1/2 " " 1 " " 6.00

## CAPE CHISEL.



**Fig. 977.**  
Per dozen.....\$6.00  
**DIAMOND NOSE CHISEL.**



**Fig. 980.**  
Per dozen.....\$6.00

## COPPER POINTED BOLT.



**Fig. 983.**  
Per pound.....\$0.50

## SOLDERING COPPER.



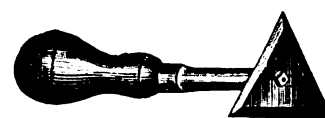
**Fig. 986.**  
Per pound.....\$0.50

## PHILA. PATTERN TAP BORER.



**Fig. 992.**  
Extra Heavy Shank.  
Per doz.....\$5.00

## TRIANGLE SHAVE HOOK.



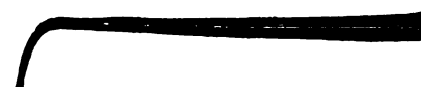
**Fig. 991.**  
Per doz... \$3.50

## BOSSING STICK.



**Fig. 994.**  
Boxwood.....per doz., \$10.00  
Dogwood or Hickory....." 8.00

## BLOW PIPE.



**Fig. 997.**  
Taper.....per doz., \$10.75  
Straight....." 7.00  
Taper with bulb....." 7.00

PLUMBERS' TOOLS, FURNACES, ETC.

GAS FITTERS' AUGER.



Fig. 998.

Sizes, inches.....	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
Per dozen.....	\$7.20	9.00	10.80	12.60	14.40	16.20	18.00	21.00	25.20 28.80

PIPE DRILL.



Fig. 999.

Sizes, inches.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Each.....	\$0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00

CHASERS FOR THREADING PIPE.

Outside Chaser.



Fig. 1000.

$\frac{1}{8}$  to 4 inch, gas pipe threads ..... each, \$0.75

Inside Chaser.



Fig. 1001.

$\frac{1}{8}$  to 4 inch, gas pipe threads.....each, \$0.75

POT HOOK.



Fig. 1002.

Wrought Iron.....per dozen, \$1.50

MELTING POT.



Fig. 1003.

Diameter of Top.	Each.
5 inches.....	\$0.50
6 ".....	.65
6 $\frac{1}{2}$ ".....	.70
8 ".....	1.10
9 ".....	1.30
10 $\frac{1}{2}$ ".....	1.75
13 $\frac{1}{2}$ ".....	3.50

MELTING LADLE.



Fig. 1004.

MALLEABLE IRON.

Diameter Bowl, inches.....	2 $\frac{1}{2}$	3	4	5	6
Per dozen.....	\$2.30	2.52	4.00	6.80	8.60

STEEL BOWL, LIPPED RIGHT OR LEFT.

Diameter bowl, inches.....	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	4	5	6
Per dozen.....	\$2.75	3.50	4.00	4.75	6.50	8.00

EXTRA HEAVY STEEL BOWL.

For use in mines and foundries. The 6 and 7 inch are made of  $\frac{3}{8}$ , and balance of  $\frac{1}{2}$  inch steel.

Diameter bowl, inches.....	6	7	8	9	10
Per dozen.....	\$18.20	21.80	27.30	36.40	43.65

CHARCOAL FURNACE.

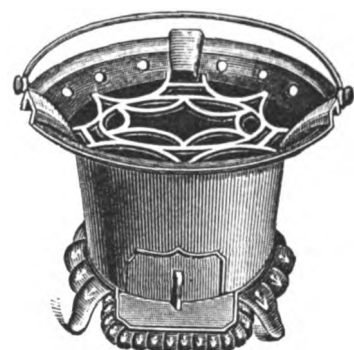


Fig. 1005.

Diameter of Top.	Each.
12 inches.....	\$1.50
13 ".....	1.75
14 ".....	2.25
15 ".....	2.50

GAS TAPPING MACHINE.

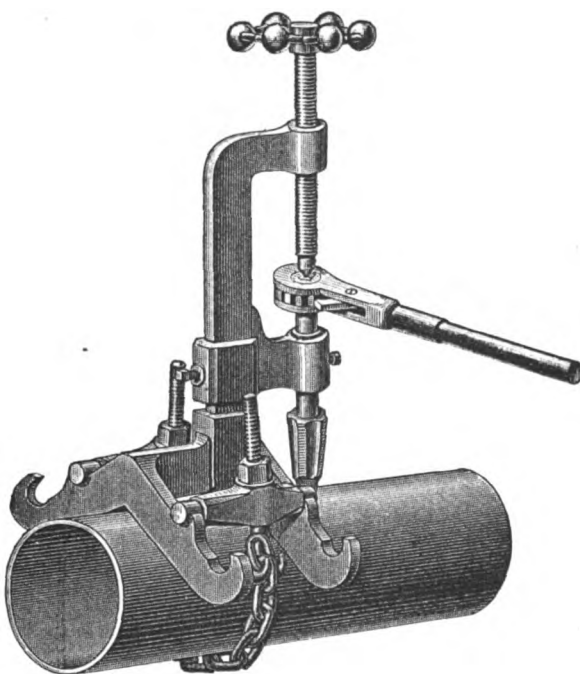


Fig. 1006.

Machine complete, except tools, for tapping any size mains.....	each, \$21.00
$\frac{1}{2}$ inch, combined Taps and Drills.....	" 4.00
$\frac{3}{4}$ " " " ".....	" 4.50
1 " " " ".....	" 5.00
$1\frac{1}{4}$ " " " ".....	" 6.00
$1\frac{1}{2}$ " " " ".....	" 7.00
2 " " " ".....	" 8.00

When ordering Tapping Machines Figs. 1006 and 1008, state amount of pressure, size of pipe, etc.

COMMON PIPE CROW.

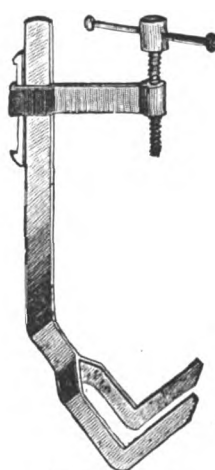


Fig. 1007.

For drilling and tapping street mains.

No. 1, holding pipe $1\frac{1}{2}$ to 3 ins.....	each, \$10.00
" 2, " $1\frac{1}{2}$ to 6 ins.....	" 13.00
" 3, " $1\frac{1}{2}$ to 12 ins. ....	" 16.00

Price, Water Tapping Machine.

Fig. 1008.

Machine complete, including 1 chain for any size of pipe, 4 malleable saddles for any size of pipe, 1 combined drill and tap, each  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$  and 1 inch; 1 plug, each  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$  and 1 inch.

Each.....\$100.00

The large Clevis, with wheel, is used for very heavy pressure, and is only furnished when specially ordered.

Extra, each.....\$5.00

WATER TAPPING MACHINE.

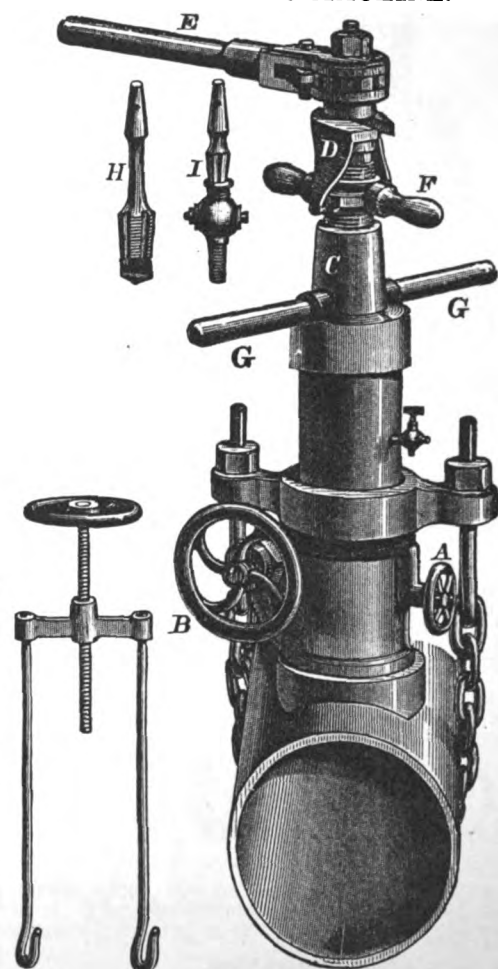


Fig. 1008.

## PIPE AND COMBINATION VISES.

## OPEN JAW PIPE VISE.

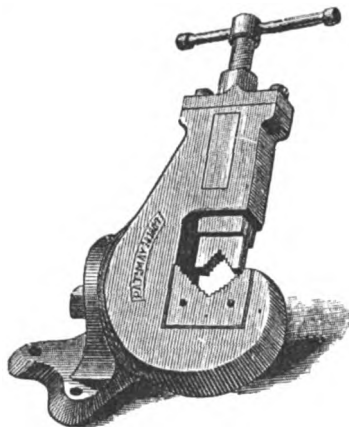


Fig. 1009.

No. 1, Holds pipe  $\frac{1}{8}$  to  $1\frac{1}{4}$  ins., each, \$15.00  
 " 2, "  $\frac{1}{4}$  to 2 " " 18.00  
 " 3, "  $\frac{1}{4}$  to 3 " " 30.00

## IMPROVED ADJUSTABLE ANGLE PLATE PIPE VISE.

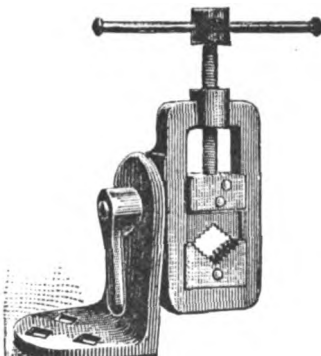


Fig. 1010.

The advantage of this Vise is that it can be placed at any angle and held there.  
 Holds Pipe  $\frac{1}{4}$  to 2 ins., weight, 31 lbs., each, \$8.00

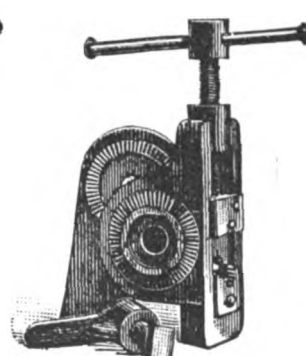


Fig. 1011.

## ANGLE PLATE PIPE VISE.

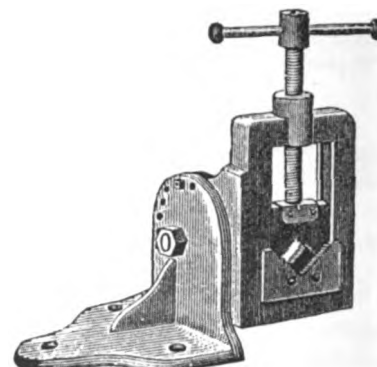


Fig. 1012.

Holds Pipe  $\frac{1}{8}$  to 3 ins., weight, 42 lbs., each, \$20.00  
 Light Vise Without Angle Plate,  
 Holds Pipe  $\frac{1}{8}$  to 2 ins., weight, 14 lbs., each, \$10.00

## MALLEABLE IRON PIPE VISES.

## Plain.

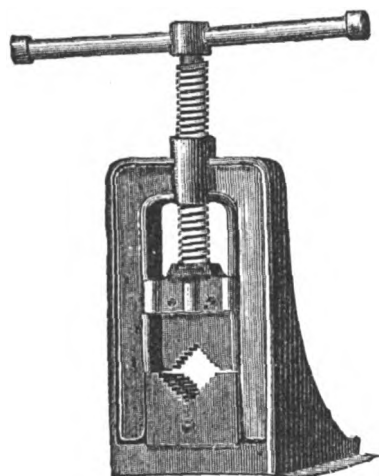


Fig. 1013.

Holds Pipe  $\frac{1}{8}$  to 2 ins.  
 Weight each, 15 lbs.  
 Each .....\$8.00

## Angle.

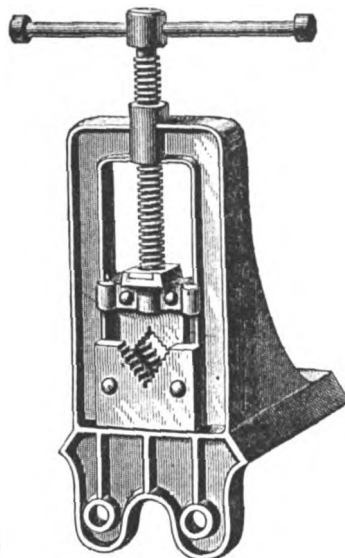


Fig. 1014.

Holds Pipe  $\frac{1}{4}$  to 3 ins.  
 Weight each, 30 lbs.  
 Each .....\$12.00

## Hinged.

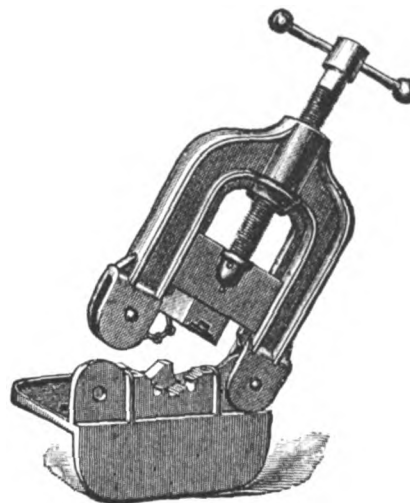


Fig. 1015.

Nos.	Holds Pipe.	Weight.	Each.
1	$\frac{1}{8}$ to 2 ins.	20 lbs.	\$10.00
2	$\frac{1}{8}$ to 3 "	28 "	14.00

## SWIVEL PIPE VISE.

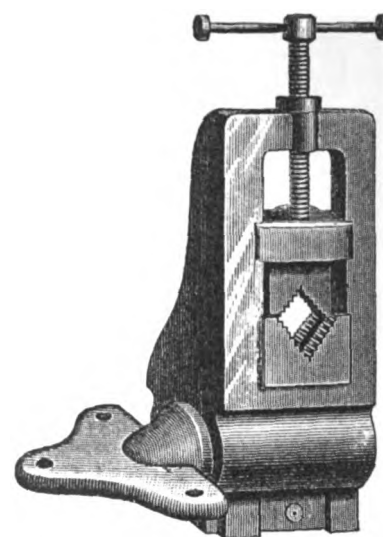


Fig. 1016.

No.	Holds Pipe	Weight	Each
1	$\frac{1}{8}$ to 2 ins.	14 lbs.	\$14.00
2	$\frac{1}{8}$ to 3 "	18 "	18.00
3	$\frac{1}{4}$ to 4 "	30 "	30.00

## ANGLE PLATE PIPE VISE.

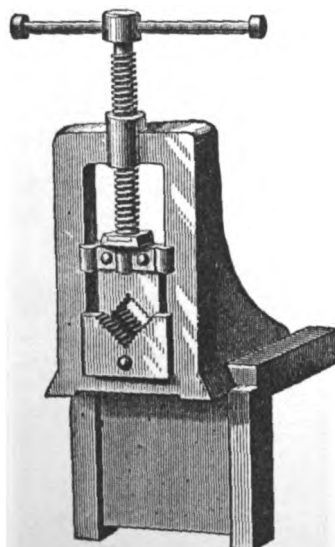


Fig. 1017.

No.	Holds Pipe	Weight	Each
1	$\frac{1}{8}$ to 2 ins.	12 lbs.	\$12.00
2	$\frac{1}{4}$ to 3 "	16 "	16.00
3	$\frac{1}{2}$ to 4 "	28 "	28.00

Light Pattern Vises.  
 No. 1 Holds Pipe  $\frac{1}{8}$  to 2 ins., each, \$11.00  
 " 2 "  $\frac{1}{4}$  to 3 " " 15.00

## MALLEABLE IRON HINGED PIPE VISE.

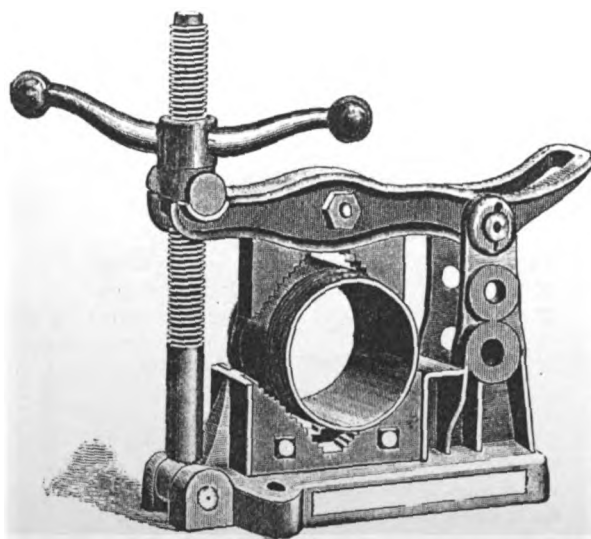


Fig. 1018.

No.	Holds Pipe	Weight	Each
1A	$\frac{1}{8}$ to 2 ins.	12 lbs.	\$12.00
2A	$\frac{1}{8}$ to 4 "	16 "	16.00
3	2 to 6 "	24 "	24.00
4	6 to 12 "	60 "	60.00

These Vises are strong, well made, and warranted in every respect.

## COMBINATION PIPE AND MACHINIST VISE.

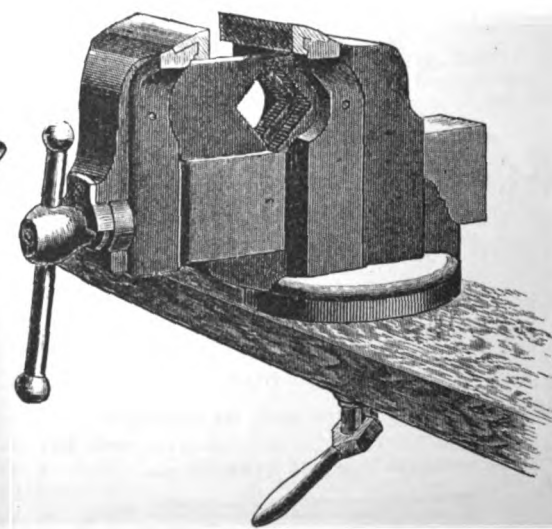


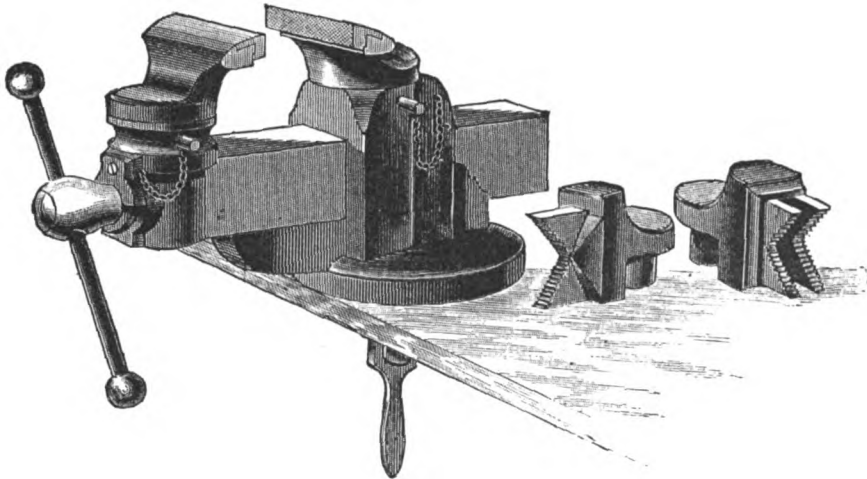
Fig. 1019.

No.	Holds Pipe	Weight	Each
87	to 2 ins.	41 lbs.	\$16.00
88	to 3 "	59 "	20.00

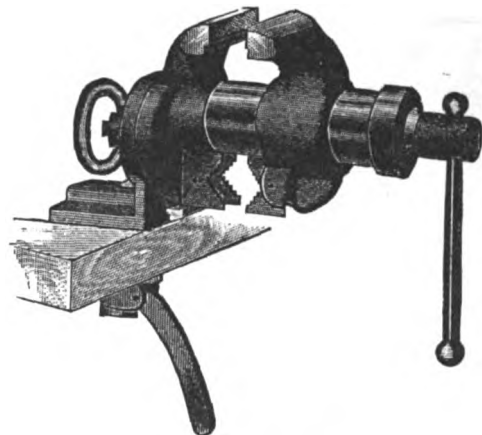
Heavy Vises same style as above but to bolt to bench.  
 No. 88 $\frac{1}{2}$  Hold Pipe to 4 ins., weight, 94 lbs., each, \$28.00  
 " 89 " " 6 " " 141 " " 35.00

**EXCELSIOR COMBINATION VISE.**

## UNIVERSAL COMBINATION VISE.



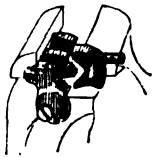
**Fig. 1020.**



**Fig. 1021.**

### ADJUSTABLE PIPE GRIP.

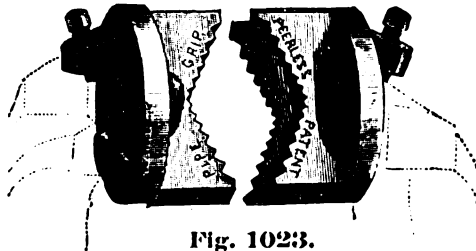
**PEERLESS PATENT PIPE GRIP.**



**Fig. 1022.**

### Fitting Stephens' Machinist Vises.

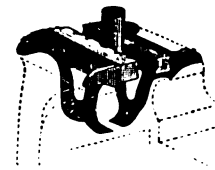
23 $\frac{1}{2}$ inches, holding pipe to 11 $\frac{1}{2}$ inch...each,	\$2.75
31 $\frac{1}{2}$ " " " 11 $\frac{1}{2}$ " ... "	4.00
41 $\frac{1}{2}$ " " " 2 " ... "	5.50
51 $\frac{1}{2}$ " " " 3 " ... "	7.50
61 $\frac{1}{2}$ " " " 3 " ... "	7.50



**Fig. 1023.**

**Can be used on any iron worker's vise.**

No. 1	fits vize 3 to 4 1/4 ins., holds pipe	1 1/4 to 2 1/2 ins.	ea.	\$2.50
" 2	" 5 to 6 1/2 ins., "	1 1/4 to 5 ins.	"	2.75
" 3	" 7 to 8 1/2 ins., "	1 1/4 to 6 ins.	"	3.00



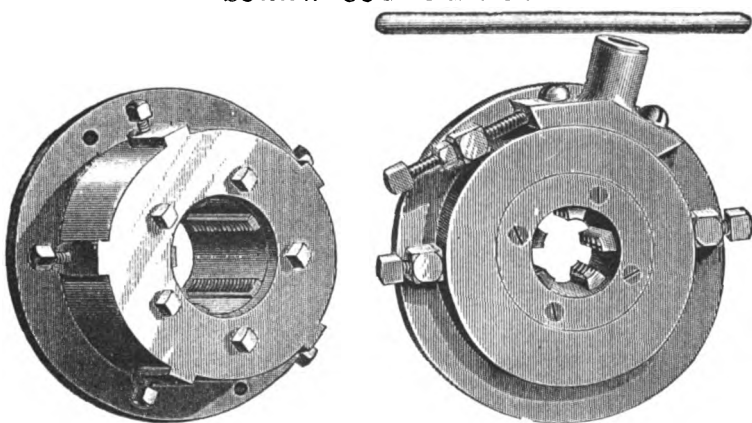
**Fig. 1024.**

**Readily adjusted to any size machinists' vise.  
Will grip pipe either vertically or horizontally.**

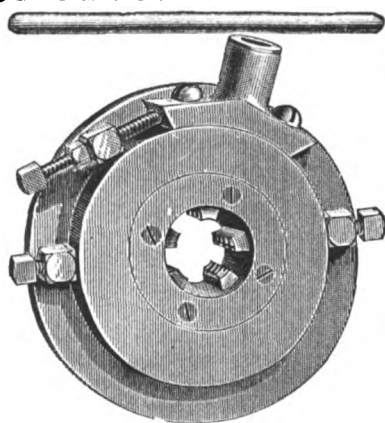
2	ins....each,	\$1.50	4 $\frac{1}{2}$	ins....each,	\$4.00
2 $\frac{3}{4}$	" .... "	2.00	5 $\frac{1}{2}$	" .... "	5.00
3 $\frac{1}{2}$	" .... "	3.00			

**SCREW CUTTING DIES.**

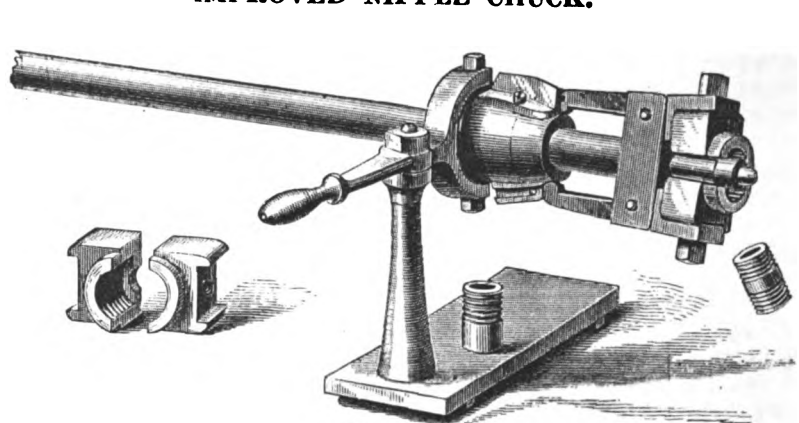
### IMPROVED NIPPLE CHUCK.



**Fig. 1025.**



**Fig. 1026.**



**Fig. 1027.**

## SCREW CUTTING ADJUSTABLE CUTTER DIES.

This Cutter Die consists of a block with slots milled in to receive the cutters, and a cap fitted on to hold the cutters in place, with set screws to adjust them to size.

**Prices, Cutter Dies, Fig. 1025.**

Sizes ..ins.,	2½	3	3½	4	4½	5	6	7	8
Each .....	\$17.00	17.00	20.00	20.00	22.00	26.00	30.00	40.00	45.00

### Prices, Extra Cutters for Cutter Dies.

Sizes...in.,	2½	3	3½	4	4½	5	6	7	8
No. in set..	5	5	5	6	6	6	6	8	8
Per Set....	\$10.00	10.00	10.00	12.50	12.50	12.50	13.00	17.50	17.50

### IMPROVED ADJUSTABLE EXPANDING SCREW CUTTING DIES, Fig. 1026.

Size.....	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	11	12
Each.....	\$20.00	20.00	20.00	20.00	20.00	22.00	22.00	30.00	35.00	35.00	40.00	45.00	50.00	50.00	55.00	65.00	75.00	100.00	120.00	130.00	145.00

**EXTRA CUTTERS FOR IMPROVED ADJUSTABLE EXPANDING SCREW CUTTING DIES.**

Sizes.....	inches,	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7	8
Number in set.....		3	3	4	4	4	4	4	5	5	5	5	6	6	6	6	8	8
Per set.....		\$4.00	4.00	5.25	5.25	5.25	5.25	5.25	6 00	11.50	11.50	11.50	14.00	14.00	14.00	14.00	18 50	18 50

### IMPROVED NIPPLE CHUCK, Fig. 1027.

This Chuck is designed to provide a means for forming the thread upon the blank or smooth end of a nipple, which may be done with great speed and facility, and without loss of time by stoppage of the machine for putting in and taking out the nipples, as is usual. The gripping jaw has a set of dogs or chucks, with threads corresponding in size and pitch with the threads upon the nipple. The arrangement is such as insures the meshing of the threads of the jaws with those of the nipples without special care on the part of the operator.

Chuck complete, holding nipples  $1_8$ ,  $1_4$ ,  $3_8$ ,  $1_2$ ,  $3_4$ , 1,  $1\frac{1}{4}$ ,  $1\frac{1}{2}$  and 2 inches. .... each, \$100.00



## CHUCKS FOR IRON PIPE THREADING MACHINES.

THREE JAWED CHUCK. THREE JAWED CONCENTRIC GRIPPING CHUCK. Front Plate.

FLANGE CHUCK.

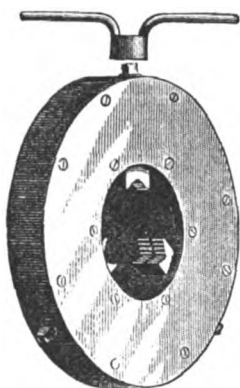


Fig. 1028.

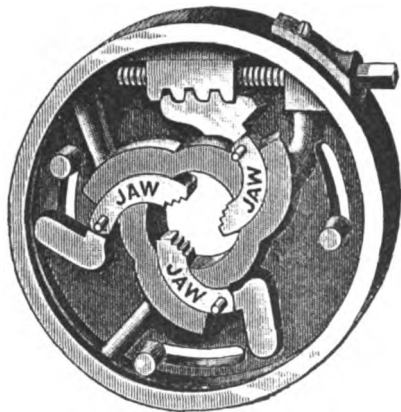


Fig. 1029.

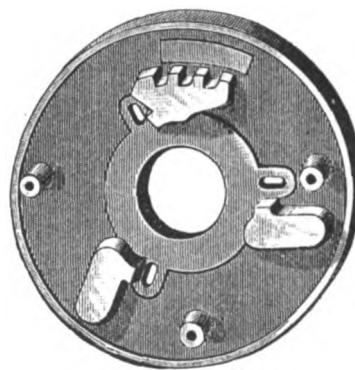


Fig. 1030.

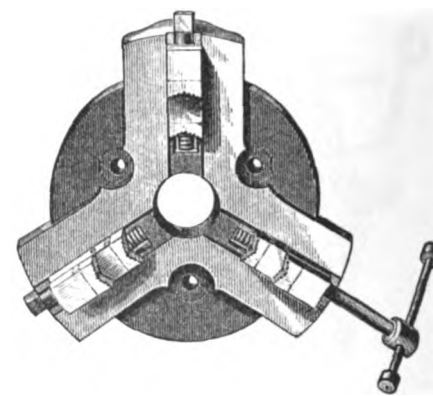


Fig. 1031.

**Independent Three-Jawed Chucks. Fig. 1028.**

No. 1, for Nos. 1 and 2 machines, page 119, holds $\frac{1}{4}$ to 2 ins.	each, \$30.00
" 3, " 3 " " " $\frac{3}{4}$ to 3 ins.	" 60.00
" 4, " 4 " " " 1 to 4 ins.	" 70.00
" 5, " 5 " " " $1\frac{1}{4}$ to 6 ins.	" 80.00
" 6, " 6 " " " $2\frac{1}{2}$ to 8 ins.	" 90.00

**Three-Jawed Concentric Chucks, Figs. 1029 and 1030.**

Only one size made.  
Holds pipe  $\frac{1}{4}$  to 2 inches.....each, \$35.00

**Universal Gripping Chucks, Complete.**

No. 1, for Nos. 1 and 2 machines, page 119, holds $\frac{1}{8}$ to 2 ins.	each, \$30.00
" 3, " 3 " " " $\frac{1}{4}$ to 3 ins.	" 45.00
" 4, " 4 " " " $\frac{1}{4}$ to 4 ins.	" 60.00
" 5, " 5 " " " 1 to 6 ins.	" 70.00
" 6, " 6 " " " 2 to 8 ins.	" 90.00

**Flange Chucks, Fig. 1031.**

Designed to hold Flanges while being tapped.  
Holds Flanges 3 to 16 inches.....each, \$100.00

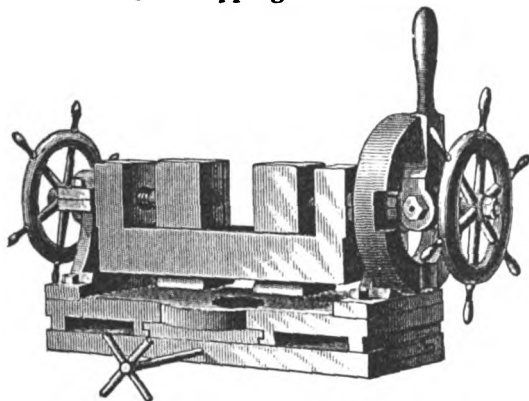
**CRANK CHUCK.**  
For Tapping Machine.

Fig. 1032.

No. 1 holds pipe fittings $\frac{1}{4}$ to $1\frac{1}{2}$ inches.	each, \$100.00
" 2 " " " $\frac{1}{4}$ to $2\frac{1}{2}$ " "	" 125.00
" 3 " " " $\frac{1}{2}$ to 6 " "	" 225.00
" 4 " " " 1 to 8 " "	" 375.00

**Description Improved Tapping Machine, Fig. 1033.**

This machine has been designed for general use as well as for steam and gas fittings.

No. 2 is arranged in regard to speed and power to tap fittings for  $\frac{1}{4}$  to 3 inch pipe. It is also well adapted to tapping all the miscellaneous articles used in steam and gas fitting. Having a round column and table, the table can be easily raised, lowered, or swung out of the way. There being a large space between the point of the spindle and the base, which is planed true, answers as a table, very large pieces of work can be placed under the drill. The space from center of spindle to column is 18 inches; frame 7 feet high, permitting of the cone pulleys being put far enough apart to allow of a good length of belt, thus avoiding a difficulty common in such machines. Besides the variation of speed obtained by the cone pulleys, three pair of gear wheels, which are very readily changed, will give almost any desired speed. The chuck for holding fittings is strong and well-fitted, and is provided with a compound movement so as to permit of its self-adjustment to the line of the spindle.

The spindle is counter-balanced, and the arrangement for moving it up and down is very convenient, being at the same time powerful and quick in its movement. It also has an attachment to the spindle for reducing the friction on same, which is very essential to a tapping machine.

A self-feed also attached when desired. This and the other improvements mentioned make a powerful and excellent machine for general work.

**SPEEDS OF LOWER CONE SHAFT AND WEIGHT OF MACHINES.**

No. 2, 150 revolutions per minute. Weight complete, 3500 pounds.
No. 3, 125 revolutions per minute. Weight complete, for 6 inch fittings, 5900 pounds.
No. 3, weight complete, with chuck for $\frac{1}{2}$ to 8 inch fittings, 6800 pounds.

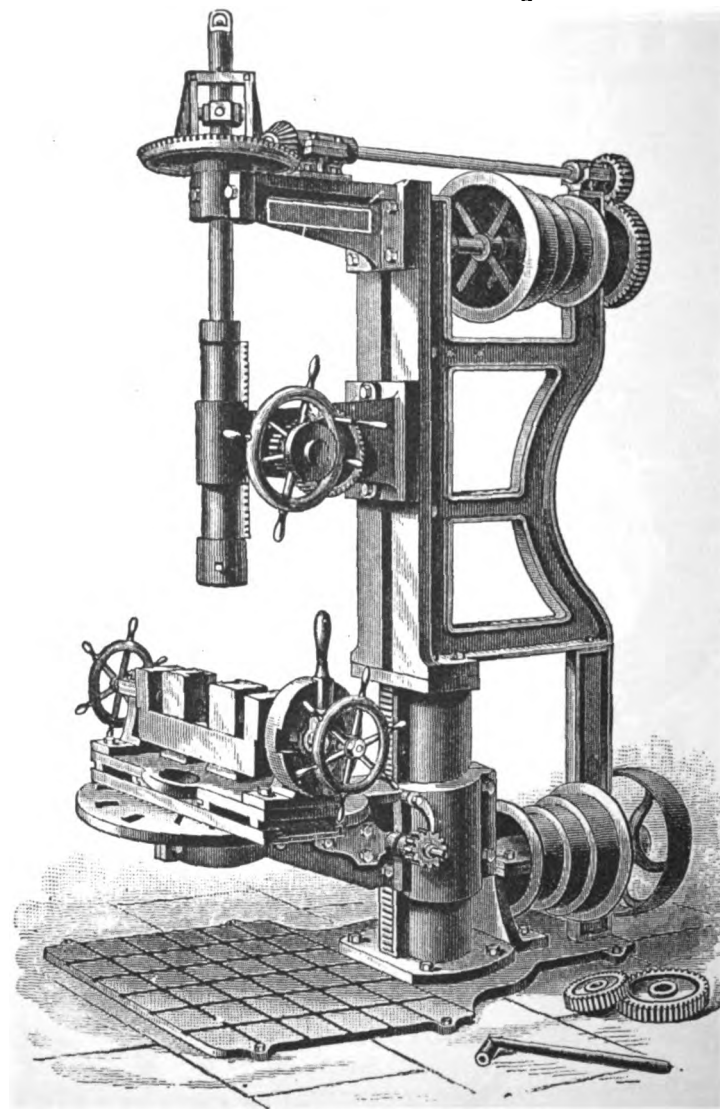
**IMPROVED TAPPING MACHINE.**  
For Steam and Gas Fittings.

Fig. 1033.

**Prices, Complete with Chuck, Countershaft, Change Wheels and Wrenches.**

No. 2, for tapping fittings for $\frac{1}{4}$ to 3 inch pipe	\$675.00
" 3, " " " $\frac{1}{2}$ to 6 " "	1125.00
" 3, " " " $\frac{1}{2}$ to 8 " "	1275.00
Self-feed attachment for drilling and boring.....extra,	50.00
Taps and Reamers extra.	

## PIPE CUTTING AND THREADING MACHINES, FOR STEAM AND GAS PIPES.

No. 1 HAND OR POWER.

No. 2 POWER WITH PATENT GRIPPING CHUCK AND DIES.

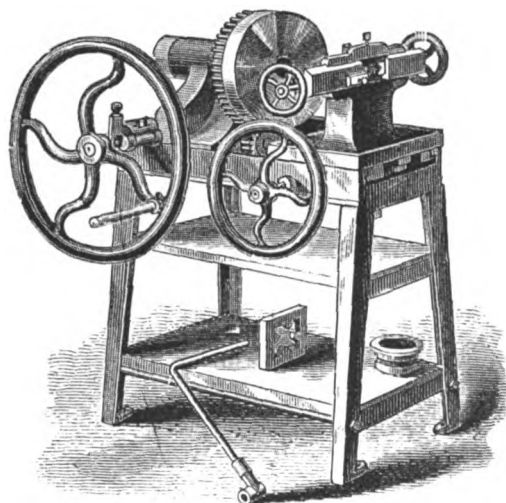


Fig. 1034.

## HAND MACHINE.

No. 1, Cutting and threading pipe from  $\frac{1}{4}$  inch to 2 inches in diameter, with universal chuck, fly wheel and solid dies, right hand, also a set of sockets for making nipples  $\frac{1}{4}$  to 2 inches, complete.....\$150.00

## POWER MACHINE.

No. 1, Cutting and threading pipe from  $\frac{1}{4}$  inch to 2 inches in diameter, with universal chuck, cone pulleys, countershaft and solid dies, right hand, also a set of sockets for making nipples  $\frac{1}{4}$  to 2 inches, complete.....\$175.00

Speed of Countershaft, 150 revolutions per minute. Diameter of Pulleys, 11 inches. Weight of Hand Machine, 550 lbs. Weight of Power Machine, 700 lbs.

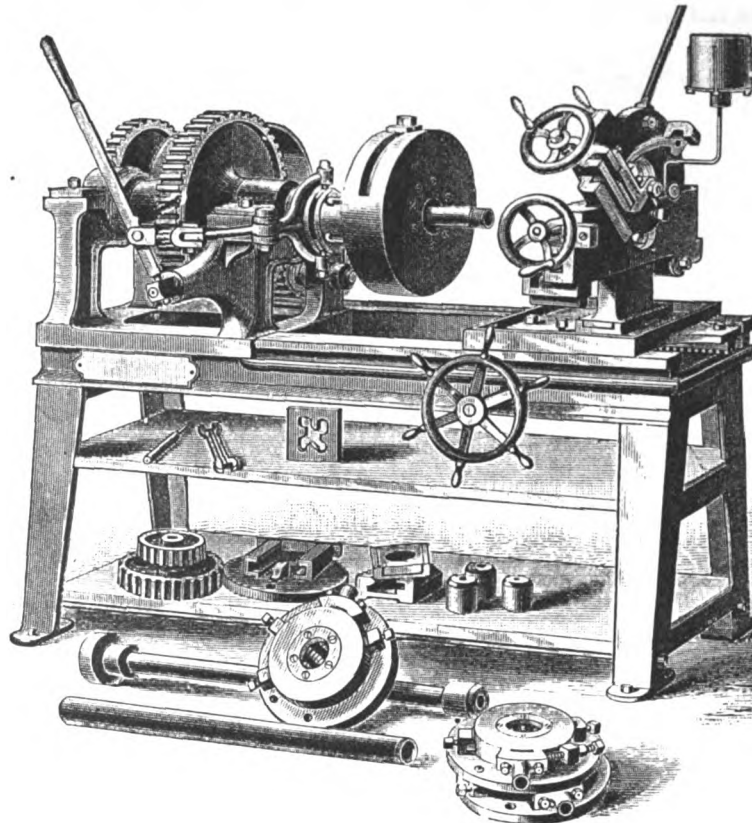


Fig. 1035.

## No. 4 POWER.

## DESCRIPTION POWER MACHINES.

Figs. 1035 and 1036.

In building these machines, the die and head to which it is attached are so constructed that pipe may be alternately threaded and cut off without removing the die from the machine.

The die plate is moved upon slides provided for that purpose. The cutting-off tool is convenient and is operated by the upper hand wheel. Two steel jaws are used for steadying the pipe while cutting it off; they are moved by a right and left hand screw, operated by a hand wheel, thereby centering the pipe. The jaws are also adjustable to compensate for wear. The universal gripping chuck for holding the pipe is strong and well fitted, and the whole arrangement of this part will be found convenient and well adapted to the purpose.

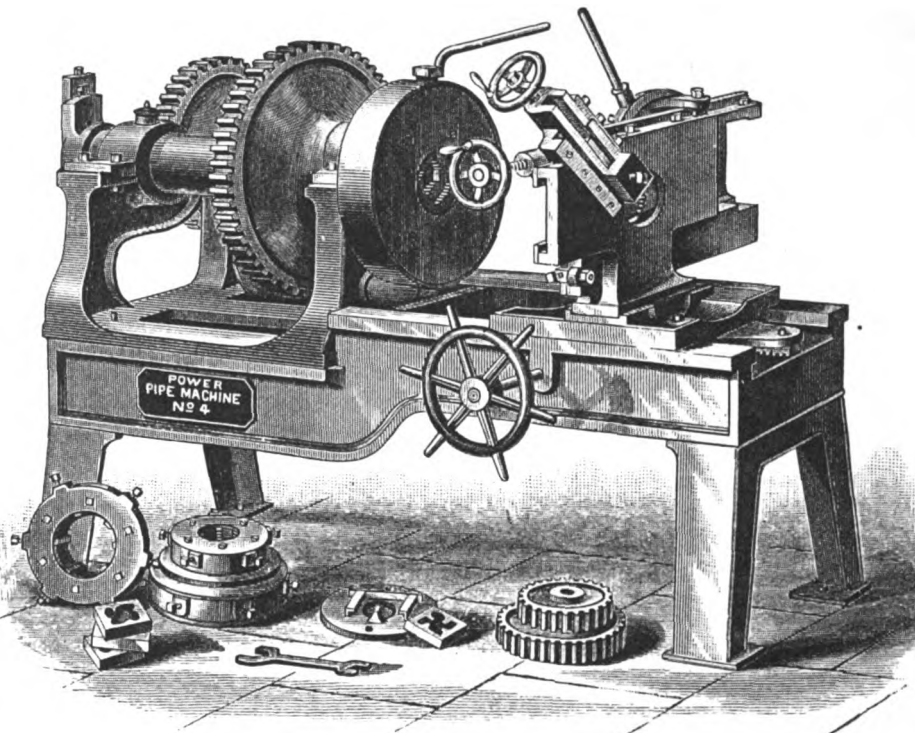


Fig. 1036.

## SPEEDS OF COUNTERSHAFTS AND DIAMETER OF PULLEYS.

Nos.	Revolutions per Minute.	Diameter of Pulleys.
2	200	11 ins.
3	200	14 "
4	210	14 "
5	180	16 "
6	172	16 "
7	172	18 "

## WEIGHTS OF MACHINES WITH COUNTERSHAFTS AND DIES.

No. 2, Complete,	1000 lbs.
" 3, "	2400 "
" 4, "	3100 "
" 5, "	4800 "
" 6, "	5600 "
" 7, "	12000 "

Great care has been exercised in making the patterns for the gearing, which are cast from iron patterns, cut in the most approved shape of teeth, and therefore the machine runs almost noiselessly.

No. 2 threads and cuts off pipe $\frac{1}{4}$ to 2 inches, with right hand solid dies, countershaft and bushings, complete.....	\$300.00
No. 2, with patent gripping chuck, also patent adjustable expanding dies right hand $\frac{1}{2}$ , $\frac{3}{4}$ , 1, $1\frac{1}{4}$ , $1\frac{1}{2}$ , 2 inches, solid dies $\frac{1}{4}$ , $\frac{3}{8}$ , and countershaft, complete.....	525.00
No. 3 threads and cuts off pipe $\frac{1}{4}$ to 3 inches, with cutter dies $2\frac{1}{2}$ and 3 inches, solid dies $\frac{1}{4}$ to 2 inches, countershaft and bushings, complete.....	425.00
No. 3, with patent adjustable expanding dies $\frac{1}{2}$ , $\frac{3}{4}$ , 1, $1\frac{1}{4}$ , $1\frac{1}{2}$ , 2, $2\frac{1}{2}$ and 3 inches, solid dies $\frac{1}{4}$ and $\frac{3}{8}$ inches, countershaft and bushings, complete....	600.00
No. 4 threads and cuts off pipe 1 to 4 inches, with cutter dies $2\frac{1}{2}$ , 3, $3\frac{1}{2}$ and 4 inches, solid dies 1 to 2 inches, countershaft, complete.....	525.00
No. 4, with patent adjustable expanding dies 1, $1\frac{1}{4}$ , $1\frac{1}{2}$ , 2, $2\frac{1}{2}$ , 3, $3\frac{1}{2}$ and 4 inches, countershaft, complete.....	725.00
No. 5 threads and cuts off pipe $\frac{1}{4}$ to 6 inches, with cutter dies $2\frac{1}{2}$ , 3, $3\frac{1}{2}$ , 4, 5, 6 inches, solid dies $\frac{1}{4}$ to 2 inches, countershaft, complete.....	875.00
No. 5, with patent adjustable expanding dies $1\frac{1}{4}$ , $1\frac{1}{2}$ , 2, $2\frac{1}{2}$ , 3, $3\frac{1}{2}$ , 4, 5, 6 inches, countershaft, complete.....	1100.00
No. 6 threads and cuts off pipe $2\frac{1}{2}$ to 8 inches, with cutter dies $2\frac{1}{2}$ , 3, $3\frac{1}{2}$ , 4, 5, 6, 7, 8 inches, countershaft, complete.....	1100.00
No. 6, with patent adjustable expanding dies $2\frac{1}{2}$ , 3, $3\frac{1}{2}$ , 4, 5, 6, 7, 8 inches, countershaft, complete.....	1200.00
No. 7 threads and cuts off pipe 4 to 12 inches, with patent dies 4, 5, 6, 7, 8, 9, 10, 11, 12 inches, countershaft, complete.....	2400.00
When these machines (Nos. 2, 3 and 4) are made to work by hand as well as power, extra cost.....	40.00

## PIPE THREADING AND CUTTING-OFF MACHINES.

ECLIPSE PIPE MACHINE, No. 1.

FORBES' CUTTING-OFF MACHINE.

ECLIPSE PIPE MACHINE, No. 2.

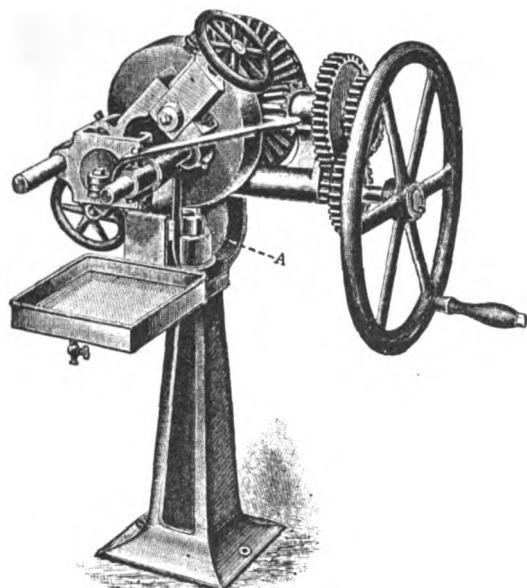


Fig. 1037.

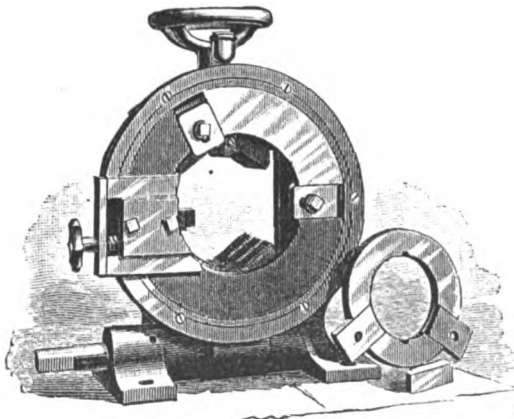


Fig. 1038.

Nos.	Range Cuts.	Weight.	Each.
1	2 to 4 inch pipe.	130 lbs.	\$ 75.00
2	5 to 8 "	200 "	125.00
3	9 to 12 "	350 "	220.00
4	13 to 16 "	Made to order.	

The above machine can be furnished with power attachment at slight extra cost.

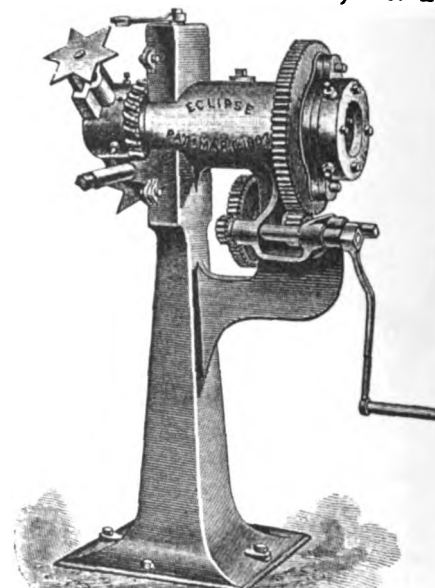


Fig. 1039.

## Prices and Description Eclipse Pipe Machine No. 1, Fig. 1037.

This tool combines in the most compact and simple form all the latest features that go to make up a first-class Pipe Cutting and Threading Machine. As all of the working portions can be detached from the stand complete by the removal of a single large bolt, "A," it is readily packed into a box for shipment, or the stand may be left in the shop and the machine quickly erected on a bench or plank, which will frequently be found convenient when working in new buildings, etc. To suit the various sizes of pipe, and work with the best possible results in point of time and labor, four speeds are provided, which are instantly changed by a simple device; and the gearing is so powerful that one man can easily cut off and thread 2 inch pipe. As shown by the cut, the Hand Machine is fitted with a heavy balance wheel, which greatly increases the momentum and power of the tool, while considerably reducing the labor required to operate it. The gripping chuck is universal in its movement, always bringing the pipe to exact center of die, and thus insuring perfectly straight threads; and it also takes the place of a vise in screwing on new and removing old fittings. The cutting-off arrangement is permanently fixed to the body of machine, is very conveniently placed, while the knives can be renewed by any smith at a trifling expense.

No. 1. Hand Machine complete, with full set of nipple chucks and set of right hand dies  $\frac{1}{4}$  to 2 inches inclusive, weight complete, 344 lbs. .... \$85.00  
 " 1P. Power and Hand Machine complete, with hand crank, countershafting, cone pulleys, etc. .... 105.00  
 Roller Pipe Stand, for handling long lengths pipe. .... each, \$5.00 Proper speed for countershaft, 225 revolutions. Size belt, 3 inches.

## Prices and Description Eclipse Pipe Machines Nos. 2 and 3, Fig. 1039.

The gearing arrangement of this machine reduces the labor to a minimum. On the No. 2 machine the gear for dies is 22 to 1; the gear for cutting off end 23 to 1. On No. 3 machine the gearing is 30 to 1 at both ends. The gripping chuck makes a convenient and powerful vise for screwing on or removing fittings from the various sizes of pipe.

No. 2, with cutter dies  $2\frac{1}{2}$ , 3,  $3\frac{1}{2}$  and 4 inches. .... \$165.00 No. 3, with cutter dies  $2\frac{1}{2}$ , 3,  $3\frac{1}{2}$ , 4,  $4\frac{1}{2}$ , 5 and 6 inches. .... \$275.00

## I X L NEW IMPROVED PIPE AND BOLT CUTTING AND THREADING MACHINE.

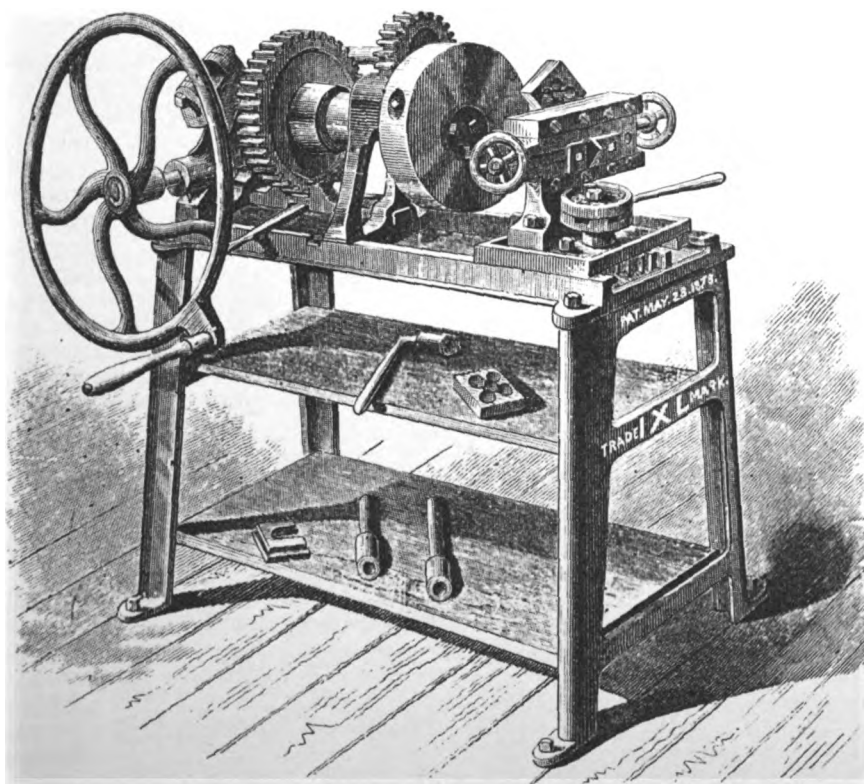


Fig. 1040.

This machine will cut pipe  $\frac{1}{4}$  to 2 inches by either hand or power. There are three changes of speed. The fast speed cuts  $\frac{1}{4}$ ,  $\frac{3}{8}$  and  $\frac{1}{2}$ ; the next  $\frac{3}{4}$ , 1 and  $1\frac{1}{4}$ ; and the slowest  $1\frac{1}{2}$  and 2 inches. The changes are made by the movement of the lever in front of the machine. The patent concentric gripping chuck is of substantial construction, having three jaws moved to the center by one screw—centering the pipe true. The machine is provided with a novel chuck on the back end of the spindle for centering the pipe, doing away with guides. The die head is arranged with cutting-off tool slide and self-centering jaws, for steadying the pipe while being cut off. The die starter is the long lever working pinion in the rack at the bottom of the die head. Crooked threads cannot be cut, as the pipe revolves and the die stands still. There are no loose guides to be changed or lost. The machine can be easily arranged to operate by belt power when desirable.

## Price, Hand Machine.

With set of right hand solid dies  $\frac{1}{4}$  to 2 inches inclusive, fly wheel, and set of sockets for making nipples  $\frac{1}{4}$  to 2 inches, complete. .... \$90.00

## Price, Power and Hand Machine.

With set of right hand solid dies  $\frac{1}{4}$  to 2 inches inclusive, fly wheel, pulleys, countershaft and set of sockets for making nipples  $\frac{1}{4}$  to 2 inches, complete. .... \$110.00

Speed of countershaft, 150 revolutions per minute; pulleys, 11 inches in diameter; weight, hand machine, 400 lbs.; power and hand machine, 600 lbs.

Attachments fitted to these machines, when ordered, for threading bolts and tapping nuts  $1\frac{1}{4}$  inches, and smaller sizes, at an additional cost.

## BOLT THREADING AND NUT TAPPING ATTACHMENT.

With this attachment the machine will thread bolts and tap nuts  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$ , 7/8, 1,  $1\frac{1}{8}$  and  $1\frac{1}{2}$  inches. .... Per set, \$76.00



# HAND AND POWER BOLT CUTTERS.

## No. 1 HAND BOLT CUTTER.

## No. 2 HAND BOLT CUTTER.

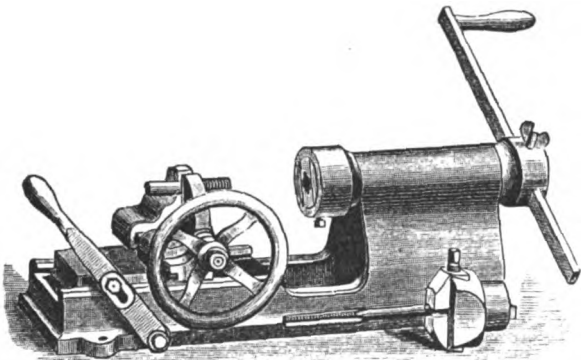


Fig. 1041.

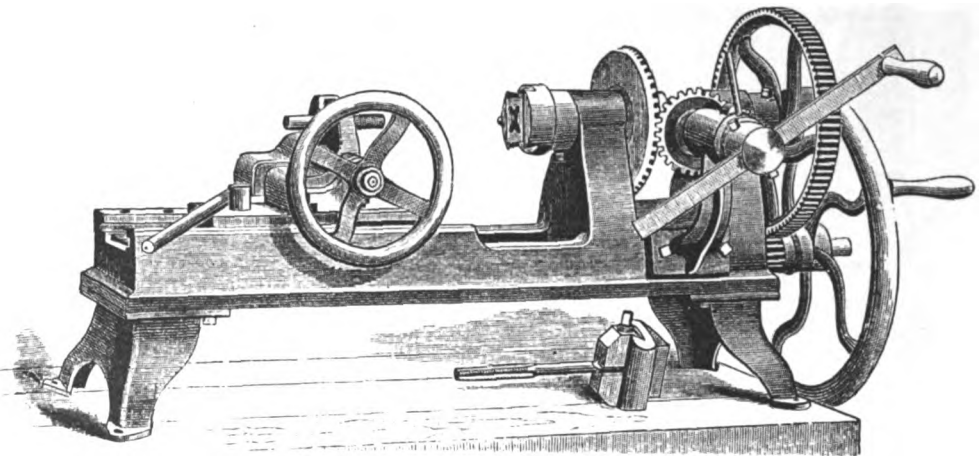


Fig. 1042.

## Nos. 2L, 2½ and 3 HAND BOLT CUTTERS.

### No. 1 HAND BOLT CUTTER.

Fig. 1041.

Cuts  $\frac{1}{4}$  to  $\frac{3}{4}$  inch, weighs 98 lbs.  
Without taps or dies.  
Each.....\$38.00  
With taps and solid or adjustable  
dies, cutting  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$  and  
 $\frac{3}{4}$  inch.  
Each.....\$60.00

### No. 2½ HAND BOLT CUTTER.

Fig. 1043.

Cuts  $\frac{1}{8}$  to  $1\frac{1}{4}$  ins., weighs 345 lbs.  
Without taps or dies.  
Each.....\$70.00  
With taps and solid dies, cutting  
 $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $1$ ,  $1\frac{1}{4}$  and  
 $1\frac{1}{2}$  inches.  
Each.....\$113.00  
With taps and adjustable dies, as  
above.  
Each.....\$120.00  
Countershaft for power furnished  
when ordered.  
Extra.....\$15.00

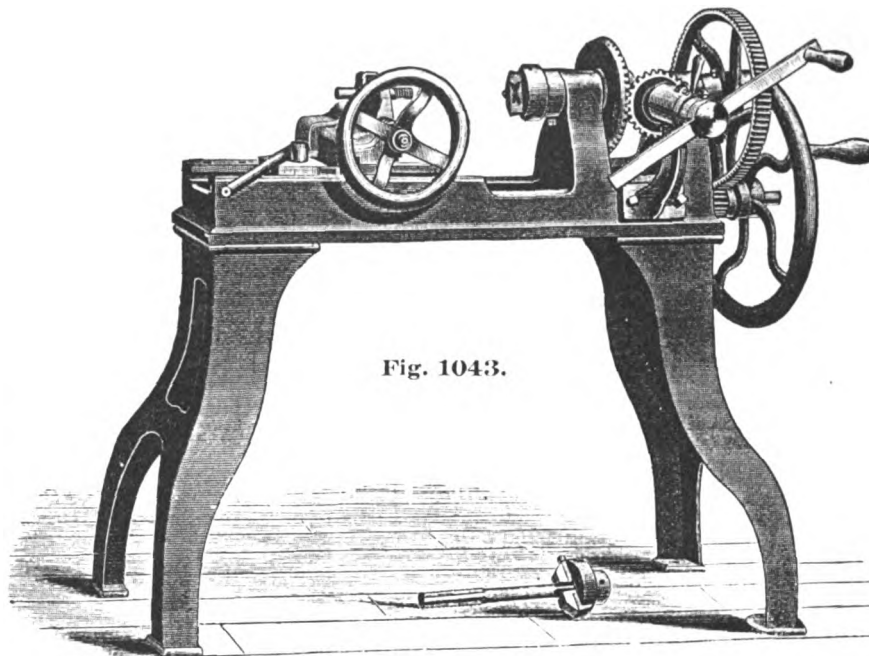


Fig. 1043.

### No. 2 HAND BOLT CUTTER.

Fig. 1042.

Cuts  $\frac{1}{4}$  to  $1$  inch, weighs 225 lbs.  
Without taps or dies.  
Each.....\$65.00  
With taps and solid dies, cutting  $\frac{1}{8}$ ,  
 $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$  and  $1$  inch.  
Each.....\$95.00  
With taps and adjustable dies, cut-  
ting as above.  
Each.....\$98.00

### No. 2L HAND BOLT CUTTER.

Fig. 1043.

Cuts  $\frac{1}{4}$  to  $1$  inch, weighs 300 lbs.  
Without taps or dies.  
Each.....\$70.00  
With taps and solid dies, cutting  $\frac{1}{8}$ ,  
 $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$  and  $1$  inch.  
Each.....\$100.00  
With taps and adjustable dies, cut-  
ting as above.  
Each.....\$103.00  
Countershaft for power furnished  
when ordered.  
Extra.....\$15.00

## No. 3P POWER BOLT CUTTER.

### No. 3 HAND BOLT CUTTER.

Fig. 1043.

Cuts  $\frac{3}{8}$  to  $1\frac{1}{2}$  ins., weighs 500 lbs.  
Without taps or dies.  
Each.....\$95.00  
With taps and solid dies, cutting  $\frac{1}{8}$ ,  
 $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $1$ ,  $1\frac{1}{4}$ ,  $1\frac{1}{2}$  and  $1\frac{3}{4}$  ins.  
Each.....\$150.00  
With taps and adjustable dies, cut-  
ting above sizes.....\$160.00

All sizes of bolt cutters, when  
ordered, without specifying to the  
contrary, are furnished with taps  
and dies for rough iron sizes; solid  
or adjustable dies furnished as may  
be desired. In ordering, please  
be careful to state whether solid or  
adjustable dies are wanted.

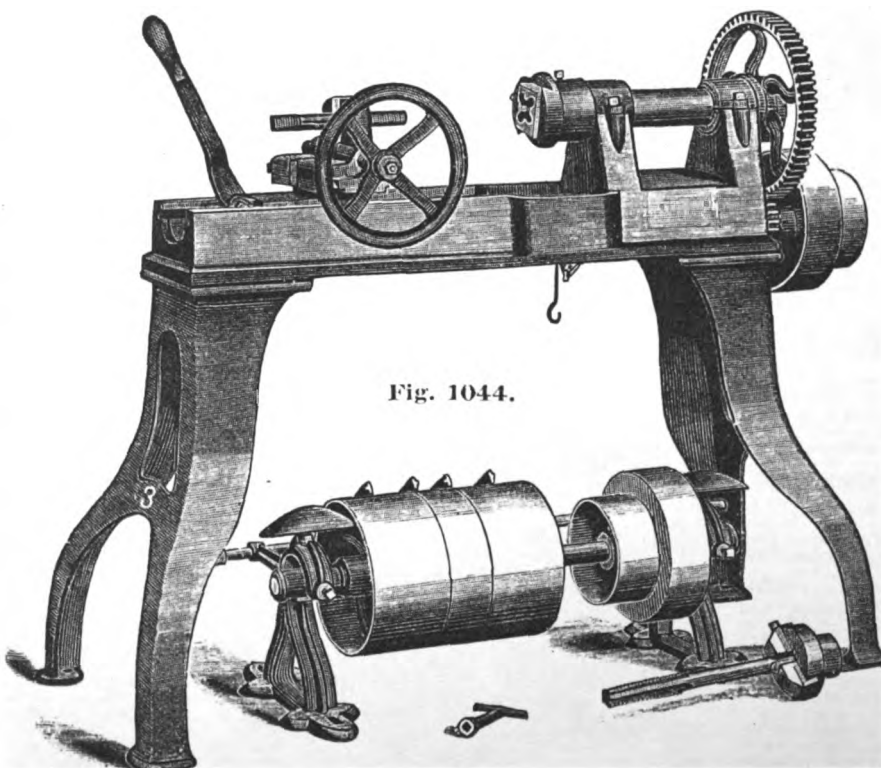


Fig. 1044.

### No. 3P POWER BOLT CUTTER.

Fig. 1044.

Cuts  $\frac{3}{8}$  to  $1\frac{1}{2}$  ins., weighs 500 lbs.  
With countershaft, without taps or  
dies.  
Each.....\$110.00  
With countershaft, taps and solid  
dies, cutting  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $1$ ,  
 $1\frac{1}{4}$ ,  $1\frac{1}{2}$  and  $1\frac{3}{4}$  inches.  
Each.....\$165.00  
With countershaft, taps and adjust-  
able dies, cutting above sizes.  
Each.....\$175.00

The driving cones are large, and  
take three inch belt. The driving  
pulleys are ten inches diameter,  
and take a two and three-quarter  
inch belt. Speed of countershaft  
should be about 100 turns per  
minute.

## HAND AND POWER BOLT CUTTERS.

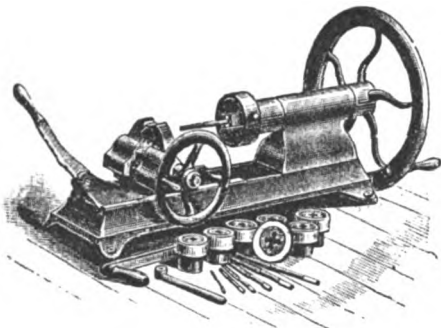
HAND BOLT CUTTER.  
No. 0.

Fig. 1045.

No. 0. Made to be bolted to the bench or table. Fitted with 7 sizes, from 1-4 inch to 3-4 inch. Usual assortment, 1-4, 5-16, 3-8, 7-16, 1-2, 5-8 and 3-4 inch.  
With Taps, Dies in Collets, etc., complete without balance-wheel ..... \$60.00  
With balance-wheel ..... 65.00  
Collets, Shanks 2 inches in diameter, for extra dies, each ..... 1.00  
Weight, 200 lbs.

When desired, I furnish  $\frac{3}{8}$  inch Tap, Die and Collet with this Machine, charging \$6.10 extra, but recommend the No. 20 or No. 10 Machines for sizes larger than  $\frac{3}{4}$  inch.  
The cut represents the machine with a balance-wheel attached. I can recommend the wheel as a decided improvement, it being very handy in running back fast after finishing a screw. Pulley for belt can be furnished instead of the balance wheel when desired, at the same price, making a very handy and efficient machine for light work.

## HAND BOLT CUTTER, No. 20.

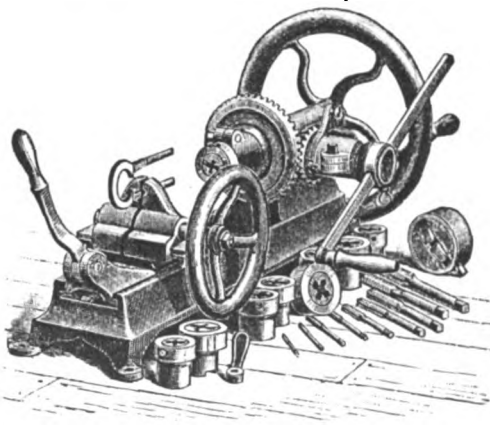


Fig. 1046.

No. 20. For the bench or table. Fitted with 9 sizes, 1-4 inch to 1 inch. Usual assortment, 1-4, 5-16, 3-8, 7-16, 1-2, 5-8, 3-4, 7-8 and 1 inch.

With Taps, Dies in Collets, etc., complete for the bench ..... \$85.00  
Mounted with Iron Legs ..... 95.00

An excellent machine for blacksmiths and repair shops. The gearing is thrown out when doing light work and when running back off of finished screws. It holds work both straight and crooked.

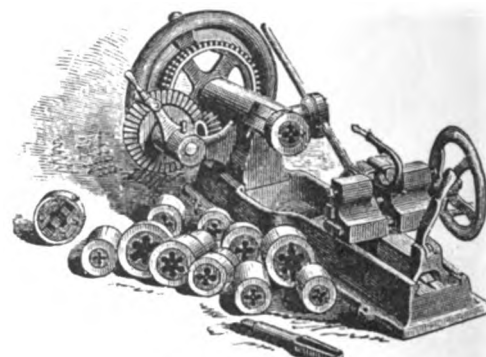
HAND BOLT CUTTER.  
No. 10.

Fig. 1047.

No. 10. The capacity of this Machine is, for bolts and nuts, 3-16 inch to 1-1-2 inches, and for pipe, 1-8 inch to 2 inches. Any crooked or odd shaped pieces may be threaded without straightening. Weight, 350 lbs.

Assortment 1. Machine complete, with Taps and Dies in Collets for bolts and nuts, 1-4, 5-16, 3-8, 7-16, 1-2, 5-8, 3-4, 7-8, 1, 1 1-8, 1 1-4, 1 3-8, and 1 1-2 inches, Chuck, Wrenches, etc., for bench ..... \$172.25

Assortment 2. Machine complete, with Taps and Dies in Collets for bolts and nuts, 3-8, 7-16, 1-2, 5-8, 3-4, 7-8, and 1 inch, with Tap Chuck, Wrenches, etc., for bench ..... \$125.00

Assortment 3. Machine complete, with Dies and Collets for pipe, right hand, 1-8, 1-4, 3-8, 1-2, 3-4, 1, 1 1-4, 1 1-2 and 2 inches, for bench ..... \$134.00  
Above Machines when mounted on Iron Legs, \$10.00 extra.

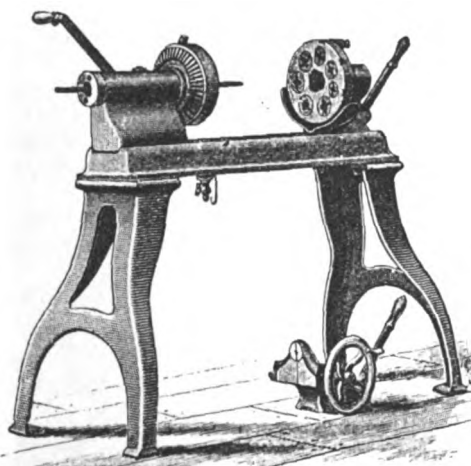
HAND BOLT CUTTER,  
No. 2 1/2.

Fig. 1048.

No. 2 1/2. Mounted on Iron Legs. Fitted with 7 sizes, from 3-8 inch to 1 inch inclusive. Usual assortment 3-8, 7-16, 1-2, 5-8, 3-4, 7-8 and 1 inch, all 1-32 inch over exact standard, unless otherwise ordered.

Complete, with Taps, Dies, Nut Chuck, etc. .... \$110.00  
Hole through spindle, 1 1/2 inch Weight of Machine, 225 lbs.  
No. 1 1/2. For the bench or table same as above but not mounted on legs ..... \$100.00

If desired, I can furnish the following extra tools with No. 1 1/2 and No. 2 1/2 Machines: Taps and Dies in collets for nuts and bolts, 1-4 inch, \$2.60; 5-16 inch, \$2.70 1 1-8 inch, \$8.60; 1 1-4 inch, \$9.70.

The Dies are set in a revolving head so that all the sizes are always ready, and any one can be brought into line with a touch. A sliding vise is provided for tapping nuts, and is useful for a variety of other purposes, such as holding pipe-threading dies or bolt-threading dies of unusual sizes.

Hand Bolt Cutter and Drill Combined.  
Fig. 1051.

No. 1. For the bench or table. Fitted with 7 sizes, from 1-4 inch to 3-4 inch. Usual assortment, 1-4, 5-16, 3-8, 7-16, 1-2, 5-8, and 3-4 inch. Drill with automatic feed.  
With Taps, Dies, Nut Chuck and Drill Rest ..... \$85.00

No. 2. Same as above but mounted handsomely and strongly on iron legs. Complete ..... \$95.00  
Extra  $\frac{3}{8}$  inch Tap and Die ..... 6.10  
Hole through spindle 1 1/2 inch. Weight of Machine, 150 lbs.

The Chuck has steel jaws, formed to hold irregularly shaped bolt heads, and to pass rods of any length to be threaded. Nuts are tapped in the vise.

In drilling the tail block, with revolving heads and dies, is slid off and replaced with the drill rest. The automatic feed at the head stock is brought into play by dropping the dog into place. It is capable of being regulated to feed fast or slow, according to the work.

## HAND AND POWER BOLT CUTTER, No. 30.

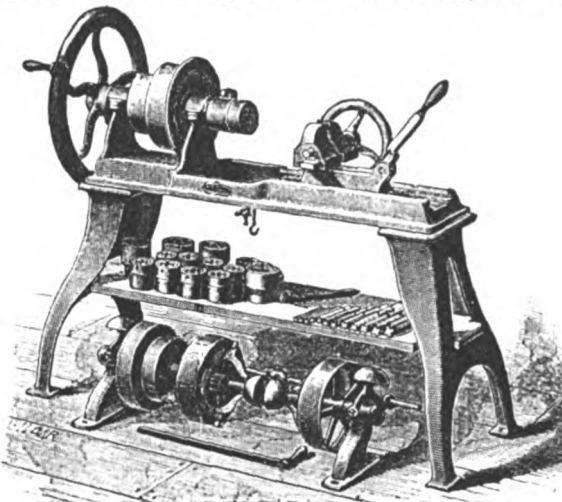


Fig. 1049.

No. 30. For use by hand or power. Fitted with 7 sizes, 1-4 inch to 3-4 inch. Usual assortment, 1-4, 5-16, 3-8, 7-16, 1-2, 5-8 and 3-4 inch.

Complete, fitted for both hand and power use, with Taps, and Dies as above, and Patent Friction Countershaft, \$120.00  
Without Pulley and Countershaft for hand use ..... 85.00  
Extra Pulleys for cutting the larger sizes above mentioned by power ..... 10.00

For light and medium work, both crooked and straight, this will be found an excellent machine, and very acceptable for carriage makers and others. When used with power, the balance wheel is unnecessary. Countershafts should be run 90 revolutions a minute.

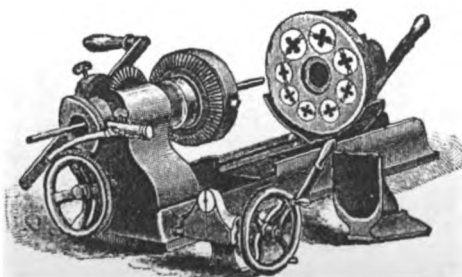
HAND BOLT CUTTER AND DRILL  
COMBINED.

Fig. 1051.

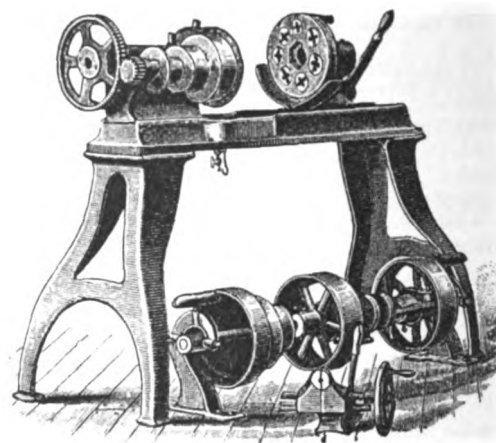
POWER BOLT CUTTERS,  
Nos. 4, 4 1/2 & 5.

Fig. 1050.

No. 4. Fitted with 7 sizes, from 5-16 inch to 7-8 inch. Usual assortment, 5-16, 3-8, 7-16, 1-2, 5-8, 3-4 and 7-8 inch. Complete, including Countershaft ..... \$175.00

No. 4 1/2. Fitted with 7 sizes, from 3-8 inch to 1 inch. Usual assortment, 3-8, 7-16, 1-2, 5-8, 3-4, 7-8 and 1 inch. Complete, including Countershaft ..... \$200.00

These are excellent machines for machine shop use. The Chuck has steel jaws, formed to take irregular shaped bolt heads and to pass rods of any length to be threaded. The dies are set in a revolving head so that all the sizes are always ready, and any one can be brought into line without delay. Nuts are tapped in the vise. Countershaft should be run about 140 revolutions a minute.

No. 5. Hole through Spindle, 3 inches. Pipe Dies 2 inches and under furnished, if required, at list. Any size required may be instantly brought into line without any delay or preparation. A lot of bolts of irregular sizes may be almost as quickly cut as if all of one size. The Nut Chuck is taken out of its place in the revolving head when not in use. The Dies and Taps are always ready and in order, no repairs and no trouble. No skill required to run, to set, and to keep accurate.

Assortment 1. Machine, with Taps and Dies for bolts and nuts, 1-4, 5-16, 3-8, 7-16, 1-2, 5-8, 3-4, 7-8, 1, 1 1-8, 1 1-4, 1 3-8 and 1 1-2 inches. Countershaft, etc. .... \$325.00

1 3-4 inch Tap, Die and Collet, to be used in the sliding vise, extra ..... 17.50  
2 inch Tap, Die and Collet, extra ..... 21.00

Cutting off Tool, swinging back out of the way when not in use, extra ..... 25.00  
Chuck on back of Spindle, for holding pipe or bars to be cut off, extra ..... 25.00

Assortment 2. Machine, with Taps and Dies for bolts and nuts, 3-8, 7-16, 1-2, 5-8, 3-4, 7-8, 1, 1 1-8, and 1 1-4 inches. Countershaft, etc. .... \$275.00

Countershaft should be run 125 revolutions a minute.



# SCREW PLATES, TAP WRENCHES, ETC.

## DUPLEX SCREW PLATE.

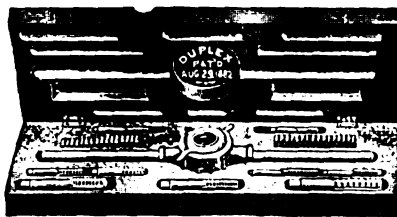


Fig. 1052.

### FOR BLACKSMITHS AND CARRIAGE MAKERS.

SET AA, WITH 7 TAPS AND 4 SETS OF DIES.  
Will { Diam. in.,  $\frac{1}{4}$  &  $\frac{3}{8}$   $\frac{1}{2}$  &  $\frac{5}{8}$   $\frac{3}{4}$  &  $\frac{7}{8}$   $1$   
cut } Thread ..... 24 18 14 12  
Complete, in case ..... \$12.00

SET A, WITH 8 TAPS AND 4 SETS OF DIES.  
Will { Diam. in.,  $\frac{1}{4}$  &  $\frac{3}{8}$   $\frac{1}{2}$  &  $\frac{5}{8}$   $\frac{3}{4}$  &  $\frac{7}{8}$   $1$   
cut } Thread ..... 18 14 12 10  
Complete, in case ..... \$17.00

SET B, WITH 10 TAPS AND 5 SETS OF DIES.  
Will { Diam. in.,  $\frac{1}{4}$  &  $\frac{3}{8}$   $\frac{1}{2}$  &  $\frac{5}{8}$   $\frac{3}{4}$  &  $\frac{7}{8}$   $1$   
cut } Thread ..... 18 14 12 10 8  
Complete, in case ..... \$24.00

SET 2, WITH 10 TAPS AND 5 SETS OF DIES.  
Will { Diam. in.,  $\frac{1}{4}$  &  $\frac{3}{8}$   $\frac{1}{2}$  &  $\frac{5}{8}$   $\frac{3}{4}$  &  $\frac{7}{8}$   $1$   
cut } Thread ..... 12 10 8 7 6  
Complete, in case ..... \$45.00

### FOR MACHINISTS AND MODEL MAKERS.

SET AA, WITH 7 TAPS AND 7 SETS OF DIES.  
Will { Diam. in.,  $\frac{1}{16}$   $\frac{1}{8}$   $\frac{3}{16}$   $\frac{1}{4}$   $\frac{5}{16}$   $\frac{3}{8}$   $\frac{7}{8}$   
cut } Thread ..... 32 24 21 18 16 14 12  
Complete, in case ..... \$15.00

SET A, WITH 8 TAPS AND 7 SETS OF DIES.  
Will { Diam. in.,  $\frac{1}{16}$   $\frac{1}{8}$   $\frac{3}{16}$   $\frac{1}{4}$   $\frac{5}{16}$   $\frac{3}{8}$   $\frac{7}{8}$   
cut } Thread ..... 20 18 16 14 12 11 10  
Complete, in case ..... \$20.00

SET B, WITH 10 TAPS AND 9 SETS OF DIES.  
Will { Diam. in.,  $\frac{1}{16}$   $\frac{1}{8}$   $\frac{3}{16}$   $\frac{1}{4}$   $\frac{5}{16}$   $\frac{3}{8}$   $\frac{7}{8}$   
cut } Thread ..... 20 18 16 14 12 11 10 9 8  
Complete, in case ..... \$30.00

## GREEN RIVER SCREW PLATE.

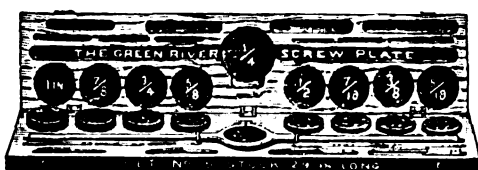


Fig. 1055.

### SET NO. 1, STOCK 10 INCHES LONG.

With both Stock and Brace Holder for Dies.

Complete, with 5 sizes, 3-16 to 7-16 inch, in case ..... \$10.50  
Adjustable Tap Wrench, size A ..... 3.00

### SET NO. 1½, STOCK 22 INCHES LONG.

Complete, with 7 sizes, 1-4 to 3-4 inch, in case ..... \$16.50  
Adjustable Tap Wrench, size B ..... 3.50  
Holders for dies in set No. 1½ to use in machine or bit brace ..... each, 1.50

### SET NO. 2, STOCK 23 INCHES LONG.

Complete, with 7 sizes, 1-4 to 3-4 inch, in case ..... \$17.50  
Adjustable Tap Wrench, size B ..... 3.50

### SET NO. 3, STOCK 29 INCHES LONG.

Complete, with 5 sizes, 1-2 to 1 inch, in case ..... \$20.00  
Adjustable Tap Wrench, size C ..... 5.00

### SET NO. 4, STOCK 29 INCHES LONG.

Complete, with 7 sizes, 3-8 to 1 inch, in case ..... \$24.00  
Adjustable Tap Wrench, size C ..... 5.00

### SET NO. 5, STOCK 29 INCHES LONG.

Complete, with 9 sizes, 1-4 to 1 inch, in case ..... \$27.00  
Adjustable Tap Wrench, size C ..... 5.00

### SET NO. 6, STOCK 35 INCHES LONG.

Complete, with 7 sizes, 1-2 to 1 1-4 inches, in case ..... \$30.00

### SET NO. 7, STOCK 35 INCHES LONG.

Complete, with 9 sizes, 3-8 to 1 1-4 inches, in case ..... \$34.50

### SET NO. 8, STOCK 35 INCHES LONG.

Complete, with 11 sizes, 1-4 to 1 1-4 inches, in case ..... \$38.50

SET NO. 13, 2 STOCKS, ONE 22 INCHES AND ONE 29 INCHES LONG.  
Complete, with 9 sizes, 1-4 to 1 inch, in case ..... \$29.00

SET NO. 16, 2 STOCKS, ONE 22 INCHES AND ONE 35 INCHES LONG.  
Complete, with 11 sizes, 1-4 to 1 1-4 inches, in case ..... \$40.25

## LIGHTNING SCREW PLATE, No. 0.



Fig. 1053.

SET NO. 0, STOCK 6 INCHES LONG.  
Full set, with 14 sizes taps and dies, 5-64 to 9-32, or with corresponding wire gauge sizes, tap wrench, bit brace holder and holder for lathe use.  
Complete, in case ..... \$17.00

Prices of single parts: Dies, 60 cents; guides, 15 cents; taps, 40 cents; wrench, 50 cents; stock, \$1.00.

### SET NO. 00, STOCK 6 INCHES LONG.

Complete with 5 sizes, 1-8 to 1-4 inch, or with 5 sizes to corresponding wire gauge numbers.  
In case, either set ..... \$6.50

### SET NO. 000, STOCK 6 INCHES LONG.

Complete, with 7 sizes, 7-64 to 1-4 inch, or with 7 sizes to corresponding wire gauge numbers.  
In case, either set ..... \$8.50

### SIZES OF TAPS AND DIES FURNISHED WITH NOS.

0, 00, and 000, LIGHTNING SCREW PLATES.

Diam. inches	No. of Threads to inch	Diam. inches	No. of Threads to inch
5-64	60	3-16	24, 28 and 32
3-32	48 and 60	13-64	24, 28 and 32
7-64	40, 44 and 48	7-32	22, 24, 28 and 32
1-8	32, 36, 40 and 44	15-64	22, 24, 28 and 32
9-64	32, 36 and 40	1-4	18, 20, 24 and 32
5-32	32, 36 and 40	17-64	18, 20, 24 and 32
11-64	32, 36 and 40	9-32	18, 20 and 24

### Prices, Stocks, Collets and Guides for Lightning Screw Plates.

Stocks for size 0, 00 and 000, \$1.00; A, \$2.00; AA, \$3.00; B and C, \$4.00; D, \$10.00. Collets for size AA, 50 cents; B and C, 75 cents; D, \$1.00. Guides for dies, size A, 20 cents.

## ADJUSTABLE LIGHTNING TAP AND REAMER WRENCH.



Fig. 1056.

Size A, length 10 1-2 ins., for taps 3-16 in. to 1-2 in. .... \$3.00  
Size B, length 15 ins., for taps 1-4 in. to 3-4 in. .... 3.50  
Size C, length 20 ins., for taps 3-8 in. to 1 in. .... 5.00

## LIGHTNING NUT WRENCH, FOR BIT BRACE USE.



Fig. 1058.

For Square or Hexagon Nuts.

Set of 5 Wrenches, for nuts  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$  and  $1$  inch.  
For set ..... \$1.25

## LIGHTNING TAPS, DIES & HOLDERS, FOR USE IN BIT BRACE.



Fig. 1059.

These are extremely valuable tools on carriage work, and for many other purposes. Since their introduction thousands have gone into use in the best shops, and given the highest satisfaction. They are very frequently kept in use even where there is a Lightning Screw Plate or Machine as old bolts can often be re-cut without removing them from their places, and much trouble saved in taking work apart.

The die is not solid, but in two pieces, and of the same construction as the dies for bolt cutting machines. Each die should have a holder of its own.

Sizes, inches	3-16	1-4	5-16	3-8	7-16
Die, Tap					
Die and Holder, complete	\$2.25	2.25	2.30	2.50	2.60
Die only	1.00	1.00	1.00	1.15	1.15
Tap only	.50	.50	.55	.60	.70

## LIGHTNING SCREW PLATE.

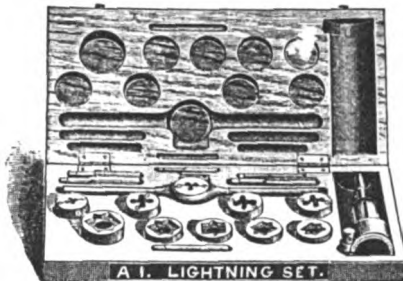


Fig. 1054.

### SET A1, STOCK 10 INCHES LONG.

Complete set, with taps and dies,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$  and  $\frac{5}{8}$  inch, stock, bit brace holder and 5 nut wrenches.  
In case ..... \$12.25  
Bit Brace Holder alone, fitting all above sizes ..... 1.25  
Nut Wrenches ..... each, .20

### SET A, STOCK 10 INCHES LONG.

Complete with 5 sizes taps, dies, etc.,  $\frac{1}{8}$  to  $\frac{5}{8}$  inch, or for machine screw sizes Nos. 14, 16, 18, 20 and 24.  
Either set, in case ..... \$10.00  
To above may be added  $\frac{1}{8}$  inch die for pipe, extra ..... 1.30  
Bit Brace Holder, for dies, extra ..... 1.25

### SET AA, STOCK 18 INCHES LONG.

Complete, with 6 sizes, 3-16 to 1-2 inch, in case ..... \$16.50  
Patent Adjustable Tap Wrench, for Set AA, extra ..... 3.00

### SET B, STOCK 23 INCHES LONG.

Complete, with 7 sizes,  $\frac{1}{4}$  to  $\frac{3}{4}$  inch, in case ..... \$25.00  
Patent Adjustable Tap Wrench, for Set B, extra ..... 3.50

### SET C, STOCK 26 INCHES LONG.

Complete, with 7 sizes,  $\frac{3}{8}$  to 1 inch, in case ..... \$32.75

### SET C, STOCK 29 INCHES LONG.

Complete, with 9 sizes, 1-4 to 1 inch, in case ..... \$37.20  
To above may be added 3-16 inch and any intermediate sizes bolt dies or pipe dies, sizes 3-8 to 1 inch.  
Patent Adjustable Tap Wrench, holding taps 3-8 to 1 inch, extra ..... \$5.00

### SET D, STOCK 53 INCHES LONG.

Complete, with 6 sizes,  $\frac{1}{2}$  to  $1\frac{1}{2}$  inch, in case ..... \$60.00  
Those sets supplied  $\frac{1}{2}$  inch over exact sizes, for rough iron, unless otherwise ordered.

## GRANT'S SCREW PLATE.

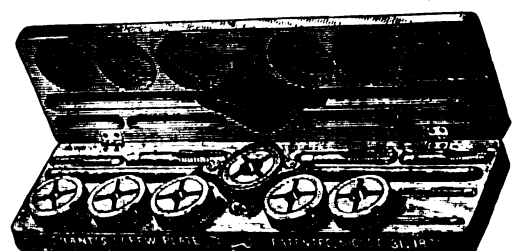


Fig. 1057.

### SET NO. 0, FOR JEWELERS, DENTISTS, TOOL MAKERS, ETC.

Complete with tap wrench, 6 taps and dies,  $\frac{1}{16}$ ,  $\frac{1}{8}$ ,  $\frac{3}{16}$ ,  $\frac{1}{4}$ ,  $\frac{5}{16}$ ,  $\frac{3}{8}$ ,  $\frac{7}{8}$ , 20, 24, 28;  $\frac{1}{8}$ , 24, 32;  $\frac{3}{8}$ , 32, 36;  $\frac{1}{2}$ , 40;  $\frac{5}{8}$ , 48, 50, Sellers or Whitworth standard, or with 6 taps and dies of either of the following sizes:  $\frac{1}{16}$ , 18, 22, 24, 26;  $\frac{1}{8}$ , 32, 36;  $\frac{3}{16}$ , 28, 36;  $\frac{1}{4}$ , 40;  $\frac{5}{16}$ , 44, 48;  $\frac{3}{8}$ , 56, 60, U. S. standard, or with 6 machine screw taps and dies to match of either of the following sizes: No. 4-32, 36, 40; No. 6-30, 32, 36, 40; No. 8-24, 30, 32, 36; No. 10-20, 22, 24, 30, 32; No. 12-20, 22, 24; No. 14-18, 20, 22, 24.  
In velvet lined case ..... \$8.00  
No. 0, same as above, in plain case ..... 7.75

### SET NO. 1.

Complete, with 5 dies and taper taps, 1-4 to 1-2 inch, in case ..... \$19.00  
With Taper and Plug Taps, extra ..... 2.80  
With Taper, Plug and Bottoming Taps ..... 5.60

### SET NO. 2.

Complete, with 6 dies and taper taps, 5-16 to 3-4 inch, in case ..... \$28.00  
With Taper and Plug Taps, extra ..... 4.45  
With Taper, Plug and Bottoming Taps ..... 8.90  
1-4 inch dies can be furnished for use in this plate if desired.

### SET NO. 3.

Complete, with 5 dies and taper taps, 1-2 to 1 inch, in case ..... \$32.00  
With Taper and Plug Taps, extra ..... 6.40  
With Taper, Plug and Bottoming Taps ..... 12.80  
3-8 and 7-16 inch dies can be furnished for use in this plate if desired.

### SET NO. 4.

Complete, with 6 dies and taper taps, 7-8 to 1 1-2 inches, in case ..... \$60.00  
With Taper and Plug Taps, extra ..... 15.00  
With Taper, Plug and Bottoming Taps ..... 30.00  
3-4 inch dies can be furnished for use in this plate if desired.

## SCREW PLATES AND TAP WRENCHES.

### BILLINGS' PATENT SCREW PLATE.

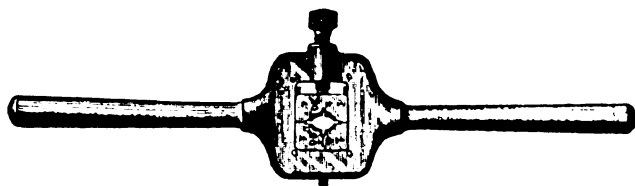


Fig. 1060.



Fig. 1061.



Fig. 1062.

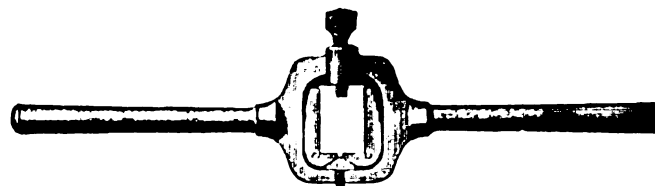


Fig. 1063.

This Screw Plate is drop-forged from the best bar steel for the purpose. The arrangement for holding in the dies is novel and new. Two feathers holding the dies in position, as shown in cut Fig. 1063, swing in and out. By turning the screw from the top die and pressing on the pin at lower edge of plate, the dies are free to drop out. Fig. 1061 represents a pair of dies for holding taps used in the plate in place of thread dies, making a very convenient tap wrench, saving the necessity of an extra wrench, as it combines the two.

No. 0, Plate only without Dies, length 6 $\frac{1}{2}$ inches.....	\$ 2.00	No. 1, with 5 pairs Dies, cutting $\frac{1}{4}$ , 20; $\frac{1}{8}$ , 18; $\frac{1}{16}$ , 16; $\frac{1}{32}$ , 14; $\frac{1}{64}$ , 13.....	\$7.00
" 1, " " " " " 15 " .....	3.25	Single pair Dies in stock to fit No. 1 Plate, from $\frac{1}{8}$ ths to $\frac{1}{64}$ ths by 32ds, 1.50	
" 2, " " " " " 23 " .....	5.00	Blank Dies for No. 1 Plate.....	per pair, .75
" 3, " " " " " 30 $\frac{1}{2}$ " .....	6.50	No. 2, with 5 pairs Dies, cutting $\frac{1}{4}$ , 12; $\frac{1}{8}$ , 12; $\frac{1}{16}$ , 11; $\frac{1}{32}$ , 11; $\frac{1}{64}$ , 10.....	10.00
" 4, " " " " " 41 " .....	16.00	Single pair Dies in stock to fit No. 2 Plate, from $\frac{1}{4}$ in. to 1 in. by 32ds, 1.50	
No. 0 Plate, length 6 $\frac{1}{2}$ ins., with Dies and Taps, cutting $\frac{1}{4}$ , 48; $\frac{1}{8}$ , 40; $\frac{1}{16}$ , 32; $\frac{1}{32}$ , 24; $\frac{1}{64}$ , 20.....	5.25	Blank Dies for No. 2 Plate.....	per pair, 1.12
No. 0 Plate as above, nickel plated, in leather covered case, lined with plush.....	6.50	No. 3, with 5 pairs Dies, cutting $\frac{1}{4}$ , 10; $\frac{1}{8}$ , 9; $\frac{1}{16}$ , 9; $\frac{1}{32}$ , 8; $\frac{1}{64}$ , 7.....	15.00
Single pair Dies for No. 0 Plate.....	per pair, .50	Single pair Dies in stock for No. 3 Plate, from $\frac{1}{4}$ to 1 inch by 16ths; 1 to 1 $\frac{1}{4}$ inch by 8ths.....	2.00
" " " holding five sizes Taps.....	.50	Blank Dies for No. 3 Plate.....	per pair, 1.50
Blank Dies for No. 0 Plate.....	.37 $\frac{1}{2}$	No. 4, with 6 pairs Dies, cutting $\frac{1}{4}$ , 6; $\frac{1}{8}$ , 6; $\frac{1}{16}$ , 5; $\frac{1}{32}$ , 5; $\frac{1}{64}$ , 4 $\frac{1}{2}$ ; 2, 4 $\frac{1}{2}$ .....	33.00
No. 0 Plate, length, 6 $\frac{1}{2}$ inches, with 5 Dies, no Taps.....	4.00	Single pair Dies, for No. 4 Plate.....	3.00

No. 0 Plates put up in paper cases. Nos. 1, 2, 3 and 4, put up in wood cases.

### STANDARD SCREW PLATE.



Fig. 1064.

This Plate is drop-forged from special gun steel. The dies are made in one piece from the best tool steel, and are cut open on one side. The plate is provided with three center-pointed screws, one of which enters the opening cut in the die, and the two others enter holes in the die opposite each other. By this arrangement the dies can be slightly opened or closed. The dies cut a full thread at once running over. Length, 6 $\frac{1}{4}$  inches.

With 5 Dies and Taps cutting sizes of American Screw Company's Standard: No. 4, 36; No. 6, 32; No. 8, 32; No. 10, 24; No. 12, 24.....	\$5.00	Standard Plate and 5 Dies, no Taps .....	\$4.00
Nickel Plated, in Morocco Case.....	6.00	Standard Plate without Dies and Taps.....	2.00
		Single Dies, each.....	.50

### MORSE TWIST DRILL CO.'S SCREW PLATES AND DIES.

#### Prices, Screw-Plates and Dies.

Size A, with 3 pair Dies, cutting $\frac{1}{4}$ , 20; $\frac{1}{8}$ , 16; $\frac{1}{16}$ , 12.....	\$5.00
" B, " 4 " " " $\frac{1}{8}$ , 16; $\frac{1}{16}$ , 12; $\frac{1}{32}$ , 11; $\frac{1}{64}$ , 10.....	8.00
" C, " 4 " " " $\frac{1}{8}$ , 12; $\frac{1}{16}$ , 11; $\frac{1}{32}$ , 10; $\frac{1}{64}$ , 9.....	10.00
" D, " 4 " " " $\frac{1}{8}$ , 9; $\frac{1}{16}$ , 8; $\frac{1}{32}$ , 7; $\frac{1}{64}$ , 7.....	13.00
" E, " 6 " " " $\frac{1}{8}$ , 6; $\frac{1}{16}$ , 6; $\frac{1}{32}$ , 5; $\frac{1}{64}$ , 5; $\frac{1}{128}$ , 4 $\frac{1}{2}$ ; 2, 4 $\frac{1}{2}$ .....	33.00

#### Prices, Extra Dies.

Size 1, Single Pair of Dies.....	\$0.40
" A, " " " " .....	1.00
" B, " " " " .....	1.25
" C, " " " " .....	1.75
" D, " " " " .....	2.00
" E, " " " " .....	3.00

#### Prices, Screw Plates Without Dies.

Size No. 1, \$1.60; A, \$3.25; B, \$4.00; C, \$5.00; D, \$6.00; E, \$16.00.

#### Prices, Screw Plates, with one, two or three pair of Dies.

Dies extra. Size A, \$2.50; B, \$3.25; C, \$4.00; D, \$5.00; E, \$15.00.

#### Prices, No. 1, Screw Plate and Dies.

For the use of Model Makers and Jewelers, cutting  $\frac{1}{4}$ , 48;  $\frac{1}{8}$ , 40;  $\frac{1}{16}$ , 32;  $\frac{1}{32}$ , 24;  $\frac{1}{64}$ , 20.

No. 1 Screw Plate, with 5 pair of Dies and 5 Taps as above.....	\$4.50
Single pair of Dies.....	.40
Set Complete, including Plate, Dies, Taps and Adjust Wrench.....	6.00
Set complete with 6 pairs Dies and 6 Taps $\frac{1}{8}$ to $\frac{1}{64}$ in. and adjustable Tap Wrench, in Morocco Case.....	6.75

### BILLING'S PATENT ADJUSTABLE TAP AND REAMER WRENCH.

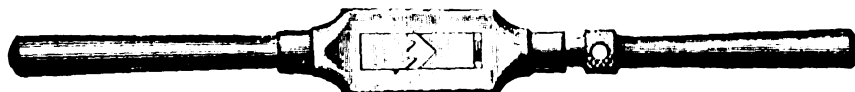


Fig. 1065.

Wrench is drop-forged from mild bar steel, and the dies are made of the best tool steel.

No. 0. Length 6 $\frac{1}{2}$ ins., Fitting Taps, $\frac{1}{4}$ to $\frac{1}{64}$ in., Reamers, $\frac{1}{4}$ to $\frac{1}{64}$ in., \$2.25.	No. 1. Length 15 ins., Fitting Taps, $\frac{1}{4}$ to $\frac{1}{64}$ in., Reamers, $\frac{1}{4}$ to $\frac{1}{64}$ in., \$3.50.
No. 2. Length 23 ins., Fitting Taps, $\frac{1}{4}$ to 1 $\frac{1}{8}$ ins., Reamers, $\frac{1}{4}$ to 1 $\frac{1}{8}$ ins., \$5.00.	

### SOLID SCREW PLATE.

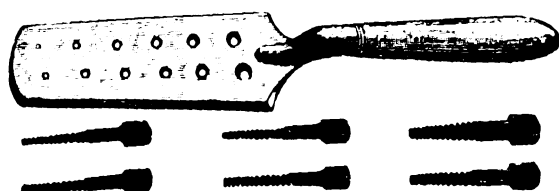


Fig. 1066.

#### STEEL SCREW PLATES, IRON HANDLE.

No. of holes.....	8	10	12	14	16
Per doz.....	\$7.50	9.25	11.00	13.00	14.80

### WOOD SCREW CUTTER.

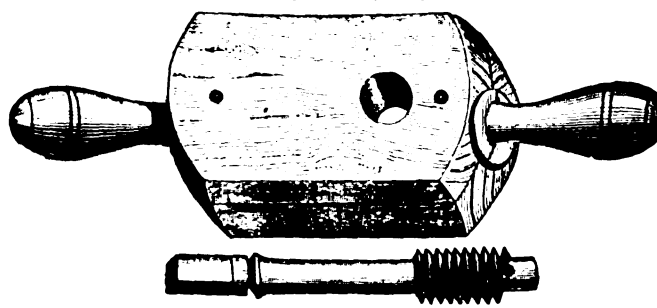


Fig. 1067.

Sizes, Ins. $\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2
Each, \$0.70	.70	.75	.80	.90	1.00	1.15	1.35	1.60	1.85	2.10	3.00	4.00

# BLACKSMITHS' AND MACHINISTS' STOCKS AND DIES.

## BLACKSMITHS' STOCK AND DIES.

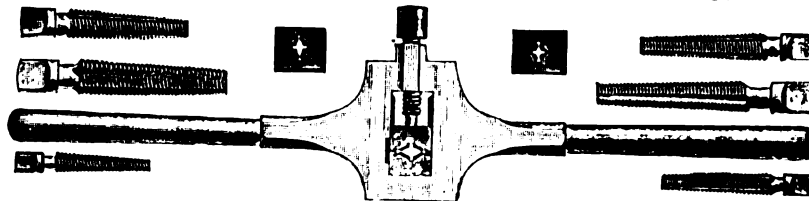


Fig. 1068.

- |   |         |
|---|---------|
| No. 1. Cuts 2 inches to 1 inch right hand, $4\frac{1}{2}$ and 7 threads to the inch, and 2 inches to 1 inch left hand, $4\frac{1}{2}$ and 7 threads to the inch, with 8 Taps and 4 pairs of Dies.....                         | \$60.00 |
| No. 2. Cuts 2 inches to $\frac{1}{2}$ inch right hand, $4\frac{1}{2}$ , 6, 7 and 8 threads to the inch, 8 Taps and 4 pairs of Dies.....   | 60.00   |
| No. 3. Cuts $1\frac{1}{2}$ inches to $\frac{1}{2}$ inch right hand, 6 and 8 threads to the inch, and $1\frac{1}{2}$ inches to $\frac{1}{2}$ inch left hand, 6 and 8 threads to the inch, with 8 Taps and 4 pairs of Dies..... | 45.00   |
| No. 4. Cuts $1\frac{1}{2}$ inches to $\frac{1}{2}$ inch right hand, 6, 7, 8 and 9 threads to the inch, with 8 Taps and 4 pairs of Dies.....   | 45.00   |
| No. 5. Cuts $1\frac{1}{2}$ inches to $\frac{1}{2}$ inch right hand, 8 and 9 threads to the inch, and $1\frac{1}{2}$ inches to $\frac{1}{2}$ inch left hand, 8 and 9 threads to the inch, with 8 Taps and 4 pairs of Dies..... | 35.00   |
| No. 5 $\frac{1}{2}$ . Cuts $1\frac{1}{2}$ inches to $\frac{1}{2}$ inch right hand, 6, 7, 8 and 9 threads to the inch, with 8 Taps and 4 pairs of Dies.....  | 35.00   |
| No. 7. Cuts $1\frac{1}{2}$ inches to $\frac{1}{2}$ inch right hand, 8 and 10 threads to the inch, and $1\frac{1}{2}$ inches to $\frac{1}{2}$ inch left hand, 8 threads to the inch, with 6 Taps and 3 pairs of Dies.....      | 12.00   |
| No. 9. Cuts $1\frac{1}{2}$ inches to $\frac{1}{2}$ inch right hand, 8, 10 and 12 threads to the inch, with 6 Taps and 3 pairs of Dies.....  | 12.00   |
| No. 17. Cuts 1 inch to $\frac{1}{2}$ inch right hand, 9 and 12 threads to the inch, and 1 inch to $\frac{1}{2}$ inch left hand, 9 threads to the inch, with 6 Taps and 3 pairs of Dies.....                                   | \$9.00  |
| No. 19. Cuts 1 inch to $\frac{1}{2}$ inch right hand, 9, 12 and 14 threads to the inch, with 6 Taps and 3 pairs of Dies.....  | 9.00    |
| No. 25. Cuts $\frac{1}{2}$ inch to $\frac{1}{4}$ inch right hand, 10 and 12 threads to the inch, and $\frac{1}{2}$ inch to $\frac{1}{4}$ inch left hand, 10 threads to the inch, with 6 Taps and 3 pairs of Dies.....         | 6.50    |
| No. 27. Cuts $\frac{1}{2}$ inch to $\frac{1}{4}$ inch right hand, 10, 12 and 16 threads to the inch, and 6 Taps and 3 pairs of Dies.....  | 6.50    |
| No. 45. Cuts $\frac{1}{2}$ inch to $\frac{1}{4}$ inch right hand, 12 and 16 threads to the inch, and $\frac{1}{2}$ inch to $\frac{1}{4}$ inch left hand, 12 threads to the inch, with 6 Taps and 3 pairs of Dies.....         | 5.50    |
| No. 47. Cuts $\frac{1}{2}$ inch to $\frac{1}{4}$ inch right hand, 12, 14 and 18 threads to the inch, with 6 Taps and 3 pairs of Dies.....   | 5.50    |
| No. 49. Cuts $\frac{1}{2}$ inch to $\frac{1}{4}$ inch right hand, 14 and 18 threads to the inch, and $\frac{1}{2}$ inch to $\frac{1}{4}$ inch left hand, 14 threads to the inch, with 6 Taps and 3 pairs of Dies.....         | 4.50    |
| No. 51. Cuts $\frac{1}{2}$ inch to $\frac{1}{4}$ inch right hand, 14, 18 and 22 threads to the inch, with 6 Taps and 3 pairs of Dies.....   | 4.50    |

## BLACKSMITHS' STOCK AND DIES.

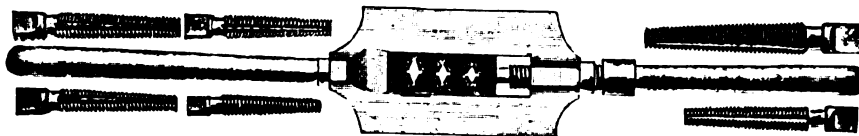


Fig. 1069.

- |   |         |
|---|---------|
| No. 6. Cuts $1\frac{1}{2}$ inches to 1 inch right hand, 8 threads to the inch, and $1\frac{1}{2}$ inches to 1 inch left hand, 8 threads to the inch, with 4 Taps and 2 sets of Dies.....                                    | \$20.00 |
| No. 11. Cuts $1\frac{1}{2}$ inches to $\frac{1}{2}$ inch right hand, 8 and 10 threads to the inch, and $1\frac{1}{2}$ inches to $\frac{1}{2}$ inch left hand, 8 threads to the inch, with 4 Taps and 3 sets of Dies.....    | 10.00   |
| No. 15. Cuts $1\frac{1}{2}$ inches to $\frac{1}{2}$ inch right hand, 8, 10 and 12 threads to the inch, with 5 Taps and 3 sets of Dies.....  | 10.00   |
| No. 21. Cuts 1 inch to $\frac{1}{2}$ inch right hand, 9 and 12 threads to the inch, and 1 inch to $\frac{1}{2}$ inch left hand, 9 threads to the inch, with 4 Taps and 3 sets of Dies.....                                  | 6.00    |
| No. 23. Cuts 1 inch to $\frac{1}{2}$ inch right hand, 9, 10 and 14 threads to the inch, with 3 Taps and 3 sets of Dies.....   | 5.00    |
| No. 32. Cuts $\frac{1}{2}$ inch to $\frac{1}{4}$ inch right hand, 10 and 14 threads to the inch, and $\frac{1}{2}$ inch to $\frac{1}{4}$ inch left hand, 10 and 14 threads to the inch, with 4 Taps and 4 sets of Dies..... | 5.00    |
| No. 33. Cuts $\frac{1}{2}$ inch to $\frac{1}{4}$ inch right hand, 10 threads to the inch, and $\frac{1}{2}$ inch to $\frac{1}{4}$ inch left hand, 10 threads to the inch, with 2 Taps and 2 sets of Dies.....               | 4.00    |
| No. 34. Cuts $\frac{1}{2}$ inch to $\frac{1}{4}$ inch right hand, 10, 12 and 16 threads to the inch, with 3 Taps and 3 sets of Dies.....  | \$4.50  |
| No. 35. Cuts $\frac{1}{2}$ inch to $\frac{1}{4}$ inch right hand, 10 and 14 threads to the inch, with 2 Taps and 2 sets of Dies.....  | 4.00    |
| No. 37. Cuts $\frac{1}{2}$ inch to $\frac{1}{4}$ inch right hand, 14, 18 and 22 threads to the inch, with 6 Taps and 3 sets of Dies.....  | 4.25    |
| No. 38. Cuts $\frac{1}{2}$ inch to $\frac{1}{4}$ inch right hand, 12 and 18 threads to the inch, and $\frac{1}{2}$ inch to $\frac{1}{4}$ inch left hand, 12 threads to the inch, with 6 Taps and 3 sets of Dies.....        | 4.50    |
| No. 41. Cuts $\frac{1}{2}$ inch to $\frac{1}{4}$ inch right hand, 16, 20 and 26 threads to the inch, with 6 Taps and 3 sets of Dies.....  | 3.25    |
| No. 42. Cuts $\frac{1}{2}$ inch to $\frac{1}{4}$ inch right hand, 14 and 20 threads to the inch, and $\frac{1}{2}$ inch to $\frac{1}{4}$ inch left hand, 14 threads to the inch, with 6 Taps and 3 sets of Dies.....        | 3.50    |
| No. 53. Cuts $\frac{1}{2}$ inch to $\frac{1}{4}$ inch right hand, 16, 20, 24 and 32 threads to the inch, with 4 Taps and 4 sets of Dies.....  | 2.75    |
| No. 55. Cuts $\frac{1}{2}$ inch to $\frac{1}{4}$ inch right hand, 18, 24 and 32 threads to the inch, with 4 Taps and 3 sets of Dies.....  | 2.50    |

## MACHINISTS' STOCK AND DIES.

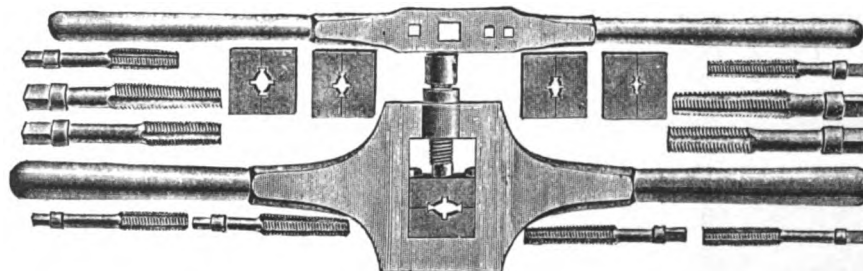


Fig. 1070.

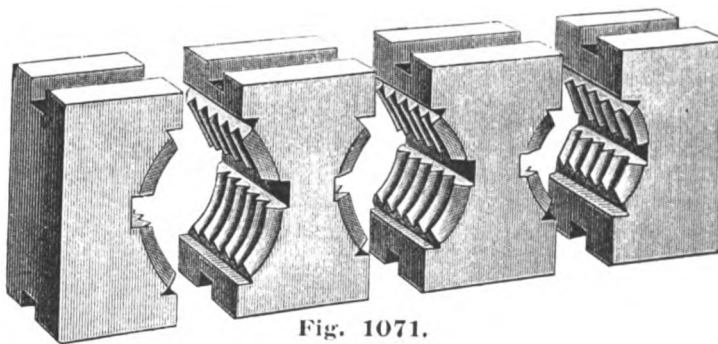
- |   |          |
|---|----------|
| K. No. 1. Cuts 2 inches to $1\frac{1}{8}$ inches inclusive, right hand.<br>Sizes, inches..... 2 $1\frac{1}{4}$ $1\frac{1}{2}$ $1\frac{3}{4}$ $1\frac{1}{2}$ and $1\frac{1}{8}$ , Plug and Paper Taps.<br>No. Threads..... 4 $\frac{1}{2}$ 5 6 6 7 7 or 8 to the inch.<br>12 Taps, 6 pairs of Dies and 2 Tap wrenches.<br>Per Set..... | \$90.00. |
| K. No. 2. Cuts $1\frac{1}{2}$ inches to $\frac{7}{8}$ inch inclusive, right hand.<br>Sizes, inches..... $1\frac{1}{2}$ $1\frac{3}{8}$ $1\frac{1}{4}$ $1\frac{1}{8}$ 1 and $\frac{7}{8}$ , Plug and Taper Taps.<br>No. Threads..... 6 6 7 7 or 8 8 9 to the inch.<br>12 Taps, 6 pairs of Dies, and Wrench.<br>Per Set.....             | \$40.00. |
| K. No. 3. Cuts $1\frac{1}{4}$ inches to $\frac{3}{4}$ inch inclusive, right hand.<br>Sizes, inches..... $1\frac{1}{4}$ $1\frac{1}{8}$ 1 $\frac{7}{8}$ and $\frac{3}{4}$ , Plug and Taper Taps.<br>No. Threads..... 7 7 or 8 8 9 10 to the inch.<br>10 Taps and 5 pairs of Dies and Wrench.<br>Per Set.....                            | \$30.00  |
| K. No. 4. Cuts 1 inch to $\frac{1}{2}$ inch inclusive, right hand.<br>Sizes, inches..... 1 $\frac{7}{8}$ $\frac{3}{4}$ $\frac{5}{8}$ and $\frac{1}{2}$ , Plug and Taper Taps.<br>No. Threads..... 8 9 10 11 12 or 13 to the inch.<br>10 Taps, 5 pairs of Dies and Wrench.<br>Per Set.....   | \$20.00  |
| K. No. 5. Cuts $\frac{3}{4}$ inch to $\frac{1}{4}$ inch inclusive, right hand.<br>Sizes, inches..... $\frac{3}{4}$ $\frac{5}{8}$ $\frac{1}{2}$ $\frac{3}{8}$ and $\frac{1}{4}$ , Plug and Taper Taps.<br>No. Threads..... 10 11 12 or 13 16 20 to the inch.<br>10 Taps, 5 pairs of Dies and Tap Wrench.<br>Per Set.....               | \$15.00  |

**DIES AND TAPS.****BLACKSMITHS' DIES.**

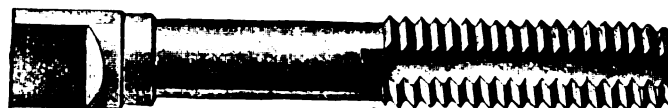
For Stocks, Page 125.

**Prices Dies.****Fig. 1071.**

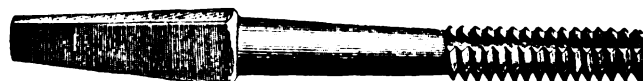
For Stocks.	Per Set.
No. 1 or 2 .....	\$12.00
" 3 or 4 .....	10.00
" 5 or 5½ .....	8.00
" 6 .....	6.00
" 7 or 9 .....	3.50
" 11 or 15 .....	3.00
" 17 or 19 .....	2.50
" 21 or 23 .....	2.00

**Fig. 1071.****Prices Dies.****Fig. 1071.**

For Stocks.	Per Set.
No. 25, 27 or 32 .....	\$2.25
" 33 .....	1.50
" 34 .....	2.00
" 35, 37 or 38 .....	1.50
" 41 or 42 .....	1.50
" 45 or 47 .....	2.25
" 49 or 51 .....	2.00
" 53 .....	1.50

**BLACKSMITHS' TAPER AND PLUG TAPS.****Fig. 1072.****Fig. 1073.**

Prices, Taper and Plug Taps.							
Diameter, Inches.	No. of Threads to Right Hand.	Taps in each Box.	No. of threads to inch, Left H. d.	Each Tap.	Diameter, Inches.	No. of Threads to Right Hand.	Taps in each Box.
1/2	30 and 32	6		\$0.30	1/2	10, 12, 14 and 16	6
3/4	24, 26 and 28	6		.30	3/4	10, 11, 12, 14 and 16	6
1	16, 18, 20, 22, 24 and 26	6		.30	1 1/4	7, 8, 9, 10, 12 and 14	6
1 1/4	14, 16, 18, 20 and 22	6		.30	1 1/2	8, 9 and 10	4
1 1/2	12, 14, 16, 18 and 20	6		.35	1 3/4	7, 8, 9 and 10	2
1 3/4	10, 12, 14, 16 and 18	6	14	.40	2	6, 7, 8 and 9	2
2	10, 12, 14, 16 and 18	6	12 and 14	.40	2 1/4	6, 7 and 8	2

**MACHINE SCREW TAPS.****ORDINARY.****Fig. 1074.****TO FIT BRACE.****Fig. 1075.**

Prices, Ordinary and Brace Machine Screw Taps.							
Diameter, Inches.	Wire Gauge No.	No. of Threads to inch.	Each.	Diameter, Inches.	Wire Gauge No.	No. of Threads to inch.	Each.
1/4	4	36 and 40	\$0.35	1/4	14	16, 18, 20, 22 and 24	\$0.38
1/8	6	30, 32, 36 and 40	.35	1/8	16	16, 18, 20 and 22	.38
3/16	8	30, 32, 36 and 40	.35	3/16	18	16, 18 and 20	.38
1/4	10	30 and 32	.35	1/4	20	16, 18 and 20	.45
5/16	12	20, 22 and 24	.35	5/16	24	14, 16 and 18	.45
3/8		20, 22 and 24	.35				

All orders for less than half a dozen of a size at single price.

**TAPER TAP.****Fig. 1076.****MACHINIST HAND TAPS.****PLUG TAP.****Fig. 1077.****BOTTOMING TAP.****Fig. 1078.**

Prices, Taper, Plug and Bottoming Machinist Hand Taps.							
Diameter, inches.	No. Threads to inch.	Price, each.	Price per Set.	Diameter, inches.	No. Threads to inch.	Price each.	Price per Set.
1/16	16, 18 and 20	\$0.45	\$1.35	1/16	9	\$1.80	\$5.40
1/8	16 and 18	.50	1.50	1/8	8	2.00	6.00
1/4	14, 16 and 18	.55	1.65	1/4	7 and 8	2.25	6.75
3/8	14 and 16	.60	1.80	3/8	7	2.60	7.80
1/2	12, 13 and 14	.70	2.10	1/2	6	3.00	9.00
5/8	12 and 14	.80	2.40	5/8	6	3.50	10.50
3/4	10, 11 and 12	.90	2.70	3/4	5 and 6	4.20	12.60
7/8	11 and 12	1.05	3.15	7/8	5	5.00	15.00
1	10, 11 and 12	1.20	3.60	1	4 1/2 and 5	5.80	17.40
1 1/4	10	1.40	4.20	1 1/4	4 1/2	6.70	20.10
1 1/2	9 and 10	1.60	4.80				

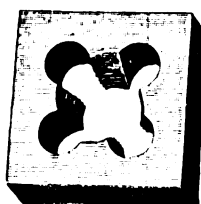
3 Taps to Set 1 each—Taper, Plug and Bottoming.

Made standard size, unless specially ordered. Full size no extra charge.

**MACHINE OR SOLID BOLT DIES.****PATENT RELIEVED.**

Prices, Machine or Solid Bolt Dies.		
Diameter, Inches.	No. Threads to inch.	Size of Square, Inches.
1/4	20	2 1/2
3/8	18	2 1/2
1/2	16	2 1/2
5/8	14	2 1/2
3/4	12	2 1/2
7/8	11	2 1/2
1	10	2 1/2
1 1/4	9	2 1/2
1 1/2	8	2 1/2

Price, each.
\$1.80
1.80
1.80
1.80
1.80
2.00
2.20
2.40
2.70

**Fig. 1079.**

Prices, Machine or Solid Bolt Dies.		
Diameter, Inches.	No. Threads to inch.	Size of Square, Inches.
1 1/4	7	2 1/2
1 1/2	7	2 1/2
1 3/4	6	2 1/2
2	6 1/2	2 1/2
2 1/4	5 1/2	2 1/2
2 1/2	5	2 1/2
2 3/4	4 1/2	2 1/2

Price, each.
\$3.00
3.30
3.60
3.90
4.20
5.40
6.50
7.50

# PULLEY, NUT, HUB AND STAY BOLT TAPS. PULLEY TAP.



Fig. 1080.

Prices, by length, each.

Diameter, Inches.	No. of Threads to Inch.	6 Inches.	8 Inches.	10 Inches.	12 Inches.	14 Inches.	16 Inches.
$\frac{1}{8}$	14, 16	\$0.80	0.90	1.10	1.30		
$\frac{1}{4}$	14, 16	.90	1.00	1.20	1.40	1.60	
$\frac{3}{8}$	12, 13		1.30	1.40	1.50	1.60	1.80
$\frac{1}{2}$	12, 13		1.35	1.45	1.55	1.70	1.85

Prices, by length, each.

Diameter, Inches.	No. of Threads to Inch.	8 Inches.	10 Inches.	12 Inches.	14 Inches.	16 Inches.	18 Inches.
$\frac{1}{8}$	10, 11	\$1.40	1.50	1.60	1.75	1.90	
$\frac{1}{4}$	10, 11	1.50	1.55	1.70	2.00	2.10	
$\frac{3}{8}$	10		1.60	1.80	2.10	2.30	2.50

I furnish the above sizes in V and United States Standard threads. Other sizes and threads made to order, and furnished at special prices.

## MACHINE OR NUT TAP.

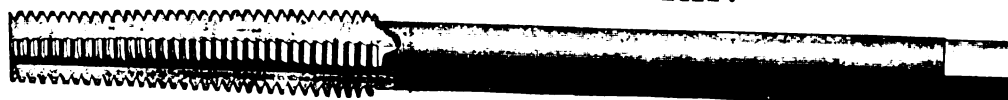


Fig. 1081.

V, U. S. or Whitworth shape of thread. Unless advised to the contrary I will send V thread.

Diam. Inches.	Whole Length.	Length Thread.	No. V Threads to Inch.	Each.	Diam. Inches.	Whole Length.	Length Thread.	No. V Threads to Inch.	Each.	Diam. Inches.	Whole Length.	Length Thread.	No. V Threads to Inch.	Each.
$\frac{1}{8}$	4 $\frac{1}{2}$	1 $\frac{1}{2}$	16, 18, 20	\$0.60	$\frac{1}{8}$	11 $\frac{1}{4}$	4 $\frac{1}{2}$	9	\$2.40	$\frac{1}{4}$	18	8 $\frac{1}{2}$	4 $\frac{1}{2}$	\$10.20
$\frac{1}{4}$	5 $\frac{1}{2}$	2	16, 18	.70	$\frac{1}{4}$	12	4 $\frac{1}{2}$	8	2.80	$\frac{1}{2}$	19	9	4	11.50
$\frac{3}{8}$	6 $\frac{1}{2}$	2 $\frac{1}{2}$	14, 16	.80	$\frac{3}{8}$	12 $\frac{1}{2}$	5	7, 8	3.20	$\frac{3}{4}$	21	10 $\frac{1}{2}$	3 $\frac{1}{2}$	12.50
$\frac{1}{2}$	7 $\frac{1}{2}$	2 $\frac{3}{4}$	12, 14, 16	.90	$\frac{1}{2}$	13 $\frac{1}{2}$	5 $\frac{1}{2}$	7, 8	3.70	$\frac{7}{8}$	21	11	3 $\frac{1}{2}$	15.00
$\frac{5}{8}$	8 $\frac{1}{2}$	3 $\frac{1}{4}$	12, 13, 14	1.00	$\frac{5}{8}$	14 $\frac{1}{2}$	6	6	4.20	1	21	11 $\frac{1}{2}$	3	18.00
$\frac{3}{4}$	9 $\frac{1}{2}$	3 $\frac{3}{4}$	10, 11, 12	1.15	$\frac{3}{4}$	15 $\frac{1}{2}$	6 $\frac{1}{2}$	5, 5 $\frac{1}{2}$	4.70	1 $\frac{1}{4}$	21	12	3	21.50
$\frac{7}{8}$	10 $\frac{1}{2}$	4	11, 12	1.30	$\frac{7}{8}$	16 $\frac{1}{2}$	6 $\frac{3}{4}$	5	5.30	1 $\frac{3}{8}$	21	12	3	25.50
$\frac{1}{2}$	11 $\frac{1}{2}$	4 $\frac{1}{2}$	10	1.45	$\frac{1}{2}$	17	7	4 $\frac{1}{2}$ , 5	6.00	1 $\frac{1}{2}$	21	12	3	29.50
$\frac{1}{2}$	11 $\frac{1}{2}$	4 $\frac{1}{2}$	10	1.60	$\frac{1}{2}$	17	8	4 $\frac{1}{2}$ , 5	6.80	1 $\frac{3}{4}$	21	12	3	33.50
$\frac{1}{2}$	11 $\frac{1}{2}$	4 $\frac{1}{2}$	9, 10	1.80	$\frac{1}{2}$	17	8	4 $\frac{1}{2}$ , 5	7.70					
$\frac{1}{2}$	11 $\frac{1}{2}$	4 $\frac{1}{2}$		2.10	$\frac{1}{2}$	17	8	4 $\frac{1}{2}$ , 5	9.00					

In ordering always state exact diameter and thread wanted.

## HUB OR MASTER TAP.



Fig. 1082.

Diameter, Inches.	No. Threads to Inch.	Each.	Diameter, Inches.	No. Threads to Inch.	Each.	Diameter, Inches.	No. Threads to Inch.	Each.
$\frac{1}{8}$	16, 18, 20	\$0.75	$\frac{1}{8}$	11, 12	\$1.81	$\frac{1}{8}$	7, 8	\$4.62
$\frac{1}{4}$	16, 18	.87	$\frac{1}{4}$	10	2.00	$\frac{1}{4}$	6	5.25
$\frac{3}{8}$	14, 16	1.00	$\frac{3}{8}$	10	2.25	$\frac{3}{8}$	6	5.87
$\frac{1}{2}$	12, 14, 16	1.12	$\frac{1}{2}$	9, 10	2.62	$\frac{1}{2}$	5, 5 $\frac{1}{2}$	6.62
$\frac{3}{4}$	12, 13, 14	1.25	$\frac{3}{4}$	9	3.00	$\frac{3}{4}$	5	7.50
$\frac{1}{2}$	12, 14	1.44	$\frac{1}{2}$	8	3.50	$\frac{1}{2}$	4 $\frac{1}{2}$ , 5	8.50
$\frac{1}{2}$	10, 11, 12	1.62	$\frac{1}{2}$	7, 8	4.00	$\frac{1}{2}$	4 $\frac{1}{2}$	9.62

Hub Taps made for any of the various bolt cutters in the market. Send with order a drawing showing the exact diameter and length of thread wanted.

## SHORT PLUG HUB TAPS.

Made like a bottoming tap, that is, without taper, as shown in Fig. 1082. Prices same as nut taps, Fig. 1081.

## STAY BOLT TAP FOR BOILER WORK.



Fig. 1083.

In ordering, state diameter and number of threads per inch, also lengths of parts at A, B, C, D and E. Prices given on application, and dependent on the size of order. Every tool warranted, and replaced without cost, if imperfect, on return of imperfect tool.

### V THREAD OR STANDARD.

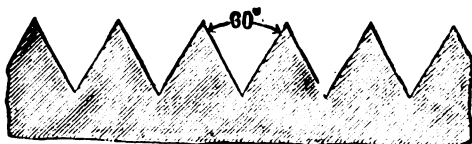


Fig. 1084.

### UNITED STATES OR FRANKLIN INSTITUTE STANDARD.

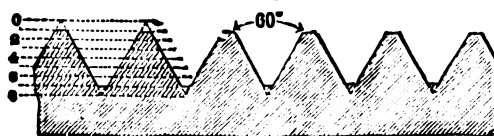


Fig. 1085.

### WHITWORTH STANDARD.

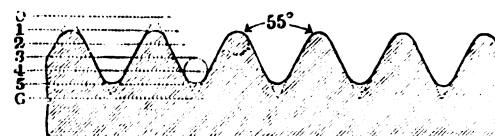


Fig. 1086.

Diameter of Tap	No. Threads to inch	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
$\frac{1}{8}$	20	18	16	14	12	11
$\frac{1}{4}$	10	9	8	7	6	5
$\frac{3}{8}$	10	9	8	7	6	5
$\frac{1}{2}$	8	7	6	5	4	3
$\frac{3}{4}$	6	5	4	3	2	1

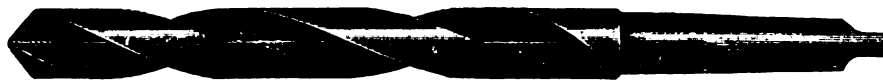
Diameter of Tap	No. Threads to inch	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
$\frac{1}{8}$	20	18	16	14	13	12
$\frac{1}{4}$	11	10	9	8	7	6
$\frac{3}{8}$	11	10	9	8	7	6
$\frac{1}{2}$	11	10	9	8	7	6
$\frac{3}{4}$	6	5	4	3	2	1

Diameter of Tap	No. Threads to inch	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
$\frac{1}{8}$	20	18	16	14	12	11
$\frac{1}{4}$	10	9	8	7	6	5
$\frac{3}{8}$	10	9	8	7	6	5
$\frac{1}{2}$	8	7	6	5	4	3
$\frac{3}{4}$	6	5	4	3	2	1



## TWIST DRILLS AND TAPER SOCKETS.

### PATENT INCREASE TWIST TAPER SHANK DRILL.



**Fig. 1087.**

No. 102, Morse Taper.			No. 103, American Taper.			No. 104, Straight Shank.								
Diam., Inches.	Length, Inches.	Price, Each.	Diameter, Inches.	Length, Inches.	Price, Each.	Diameter, Inches.	Length, Inches.	Price, Each.	Diameter, Inches.	Length, Inches.	Price, Each.	Diameter, Inches.	Length, Inches.	Price, Each.
1	6	\$0.60	1	8	\$1.30	1	10	\$2.75	1	14	\$4.65	1	15	\$7.20
1	6	.65	1	8	1.40	1	10	2.90	1	14	4.80	1	15	7.50
1	6	.70	1	9	1.50	1	11	3.00	1	14	5.00	1	15	7.80
1	6	.75	1	9	1.60	1	11	3.20	1	14	5.20	1	15	8.10
1	6	.80	1	9	1.70	1	11	3.40	1	14	5.40	1	15	8.40
1	7	.85	1	9	1.85	1	11	3.60	1	14	5.60	1	15	8.60
1	7	.90	1	9	2.00	1	11	3.80	1	14	5.80	1	15	8.80
1	7	.95	1	10	2.15	1	11	4.00	1	15	6.00	1	16	9.00
1	7	1.00	1	10	2.30	1	12	4.20	1	15	6.30	1	16	9.20
1	8	1.10	1	10	2.45	1	12	4.40	1	15	6.60	1	16	9.35
1	8	1.20	1	10	2.60	1	12	4.50	1	15	6.90	1	16	9.50

### Prices, Taper Shank Drills in Sets.

Set No. 1, $\frac{1}{4}$ to 1 inch, varying by $\frac{1}{16}$ ths.....	Per Set, \$20.00	Set No. 4, $\frac{3}{8}$ to $\frac{3}{4}$ inch by 32ds, $\frac{3}{4}$ to 2 inches by 16ths....	Per Set, \$131.00
" 2, $\frac{3}{8}$ to $1\frac{1}{4}$ " " ".....	" 34.50	" 11, $\frac{3}{8}$ to 2 inches by 32ds.....	" 240.00
" 3, $\frac{3}{8}$ to $\frac{3}{4}$ " by 32ds, $\frac{3}{4}$ to $1\frac{1}{4}$ inches by 16ths....	" 42.00	For very exact work, a gauge plainly marked should accompany order.	

### TAPER SHANK DRILL FOR REAMER.



**Fig. 1088.**

64th Sizes. No. 113, Morse Taper. No. 114, Straight Shank.														
Diam. Ins.	Length, Inches.	Price, Each.	Diameter, Inches.	Length, Inches.	Price, Each.	Diameter, Inches.	Length, Inches.	Price, Each.	Diameter, Inches.	Length, Inches.	Price, Each.	Diameter, Inches.	Length, Inches.	Price, Each.
1 1/2	6 1/2	\$0.60	3 1/4	7 1/2	\$1.00	4 7/8	9 1/2	\$1.85	6 3/4	11	\$3.00	1 1/2	12 1/2	\$4.50
1 3/4	6 3/4	.65	3 1/2	8	1.10	5 1/8	9 3/4	2.00	7 1/4	11 1/2	3.20	1 3/4	14	4.65
2	6 7/8	.70	3 3/4	8 1/2	1.20	5 3/8	10	2.15	7 3/8	11 3/4	3.40	1 7/8	14 1/2	4.80
2 1/4	7	.75	4	8 3/4	1.30	5 7/8	10 1/4	2.30	7 7/8	11 7/8	3.60	2	14 3/4	5.00
2 1/2	7 1/4	.80	4 1/4	9	1.40	6 1/8	10 1/2	2.45	8 1/4	12	3.80	2 1/4	15	5.20
2 3/4	7 1/2	.85	4 1/2	9 1/4	1.50	6 3/8	10 3/4	2.60	8 3/8	12 1/4	4.00	2 1/2	15 1/2	5.40
3	7 3/4	.90	4 3/4	9 1/2	1.60	6 1/2	10 7/8	2.75	8 7/8	12 1/2	4.20	2 3/4	15 3/4	5.60
3 1/4	7 7/8	.95	4 7/8	9 3/4	1.70	6 3/4	10 7/8	2.90	9 1/4	12 3/4	4.40	2 7/8	16	5.80

Drills of any size or length,  
 with Taper or Straight  
 Shanks made to order.

**STEEL SOCKETS OR SLEEVES FOR MORSE TAPER SHANK DRILLS.**  
No. 100 A.



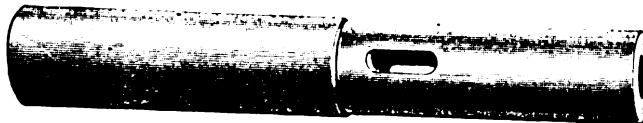
**Fig. 1089.**



**Fig. 1090.**

No. 1 with shank fitted to No. 2 or 3 Socket.....				Each, \$2.00	Fig. 1090.			
" 2 "	" "	" 3 "	"	" 2 fitted to No. 2 or 3 Socket.....	Each	\$1.80		
" 3 "	" "	" 4 "	"	" 2 " " 3 "	"	2.40		
" 4 "	" "	" 5 "	"	" 3 " " 4 "	"	3.00		
				" 4 " " 5 "	"	4.40		

## STEEL SOCKET FOR TAPER SHANK DRILLS.



**Fig. 1091.**

No. 100, Morse Taper Socket.					Fig. 1091.		No. 101, American Taper Socket.				
No. 1,	Holds Drills,	$\frac{1}{4}$ to $\frac{1}{2}$	inch, inclusive.	Each,	\$1.20	No. 1,	Holds Drills,	$\frac{1}{4}$ to $\frac{1}{2}$	inch inclusive.	Each	\$1.30
" 2,	"	$\frac{1}{2}$ to $\frac{3}{4}$	"	"	1.80	" 2,	"	$\frac{1}{2}$ to $\frac{3}{4}$	"	"	1.55
" 3,	"	$\frac{3}{4}$ to 1	"	"	2.50	" 3,	"	$\frac{3}{4}$ to 1	"	"	2.00
" 4,	"	1 $\frac{1}{4}$ to 2	"	"	4.00	" 4,	"	1 $\frac{1}{4}$ to 2	"	"	2.50
" 5,	"	2 $\frac{1}{4}$ to 2 $\frac{1}{2}$	"	"	7.50						

### TAPER SQUARE SHANK DRILL FITTING RATCHET.



**Fig. 1092.**

Diam., Ins.			Length, Inches.			Price, Each.			Diameter, Inches.			Length, Inches.			Price, Each.			Diameter, Inches.			Length, Inches.			Price, Each.		
1	5	\$1.00	1 1/2	5	\$1.15	1 1/2	6	1.20	1 1/2	6 1/2	1.25	1 1/2	7	1.30	1 1/2	7 1/2	1.35	1 1/2	8	1.40	1 1/2	8 1/2	1.45	1 1/2	9	1.50
1 1/2	5	1.05	1 1/2	6	1.20	1 1/2	6 1/2	1.25	1 1/2	7	1.30	1 1/2	7 1/2	1.35	1 1/2	8	1.40	1 1/2	8 1/2	1.45	1 1/2	9	1.50	1 1/2	9 1/2	1.55
1 1/2	5	1.10	1 1/2	6 1/2	1.25	1 1/2	7	1.30	1 1/2	7 1/2	1.35	1 1/2	8	1.40	1 1/2	8 1/2	1.45	1 1/2	9	1.50	1 1/2	9 1/2	1.55	1 1/2	10	1.60

Above prices are for Drills with shanks 1/2 by 1 inch and 1 1/2 inches long, and shanks 3/4 by 1 1/2 inches long.

When ordering Taper Square Shank Drills, specify the size of the shank.

Above prices are for Drills with shanks  $\frac{3}{4}$  by  $\frac{1}{2}$  inch and  $1\frac{1}{4}$  inches long, and shanks  $\frac{3}{4}$  by  $\frac{1}{2}$  inch and  $1\frac{1}{4}$  inches long.

When ordering Taper Square Shank Drills, please furnish drawings showing the square of the shank and its length, also full length of drill.

# TWIST DRILLS. STRAIGHT SHANK DRILL.

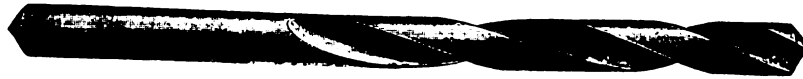


Fig. 1093.

## No. 105. JOBBERS' AND MACHINISTS' SETS.

Diam. Ins.	Length, Inches.	Price, per doz.	Price, Each.
$\frac{1}{8}$	2 $\frac{1}{2}$	\$1.00	\$0.09
$\frac{1}{4}$	2 $\frac{1}{2}$	1.10	.10
$\frac{3}{8}$	2 $\frac{1}{2}$	1.20	.11
$\frac{1}{2}$	2 $\frac{1}{2}$	1.30	.12
$\frac{5}{8}$	3	1.45	.13
$\frac{3}{4}$	3 $\frac{1}{2}$	1.60	.15
$\frac{7}{8}$	3 $\frac{1}{2}$	1.80	.16
$\frac{1}{2}$	3 $\frac{1}{2}$	2.00	.18
$\frac{1}{2}$	3 $\frac{1}{2}$	2.20	.20
$\frac{1}{2}$	3 $\frac{1}{2}$	2.40	.21
$\frac{1}{2}$	3 $\frac{1}{2}$	2.65	.23
$\frac{1}{2}$	3 $\frac{1}{2}$	2.90	.26
$\frac{1}{2}$	4	3.15	.28
$\frac{1}{2}$	4 $\frac{1}{2}$	3.40	.30
$\frac{1}{2}$	4 $\frac{1}{2}$	3.65	.32

## No. 106. LETTER SIZES.

Diam. Ins.	Decimals of 1 in.	Length, Ins.	Price, Per Doz.	Price, Each.
A $\frac{1}{8}$	.234	3 $\frac{1}{2}$	\$2.90	\$0.26
B $\frac{1}{8}$	.238	"	3.00	.27
C $\frac{1}{8}$	.242	"	3.10	.28
D $\frac{1}{8}$	.246	"	3.20	.29
E $\frac{1}{8}$	.250	"	3.30	.30
F $\frac{1}{8}$	.257	4 $\frac{1}{2}$	3.40	.30
G $\frac{1}{8}$	.261	"	3.50	.31
H $\frac{1}{8}$	.266	"	3.60	.32
I $\frac{1}{8}$	.272	"	3.70	.33
J $\frac{1}{8}$	.277	"	3.80	.34
K $\frac{1}{8}$	.281	"	3.90	.35
L $\frac{1}{8}$	.290	"	4.00	.36
M $\frac{1}{8}$	.295	"	4.10	.36
N $\frac{1}{8}$	.302	"	4.20	.37
O $\frac{1}{8}$	.316	"	4.30	.38

For very exact work, a gauge plainly marked should accompany an order.

## Prices, Straight Shank Drills in Sets.

Set No. 5,  $\frac{1}{8}$  to  $\frac{1}{2}$  inch by 64ths, mounted in block.....Per set, \$10.00.

Set No. 6,  $\frac{1}{8}$  to  $\frac{1}{2}$  inch by 32ds, mounted in block.....Per set, \$5.40.

## Prices, Straight Shank Drills numbered by Stub Steel Wire Gauge, No. 107.

Numbers by Gauge.	Length, Inches.	Price, per Doz.	Price, Each.
1 to 5	4	\$2.35	\$0.22
6 " 10	3 $\frac{1}{2}$	2.25	.21
11 " 15	3 $\frac{1}{2}$	2.10	.20

Numbers by Gauge.	Length, Inches.	Price, per Doz.	Price, Each.
16 to 20	3 $\frac{1}{2}$	\$1.95	\$0.19
21 to 25	3 $\frac{1}{2}$	1.75	.17
26 to 30	2 $\frac{1}{2}$	1.55	.15

Numbers by Gauge.	Length, Inches.	Price, per Doz.	Price, Each.
31 to 35	2 $\frac{1}{2}$	\$1.40	\$0.14
36 to 40	2 $\frac{1}{2}$	1.25	.12
41 to 45	2 $\frac{1}{2}$	1.10	.10

Numbers by Gauge.	Length, Inches.	Price, per Doz.	Price, Each.
46 to 60	2 $\frac{1}{8}$ to 1 $\frac{1}{2}$	\$0.95	\$0.09
61 to 70	1 $\frac{1}{2}$	.90	.08
71 to 80	1 $\frac{1}{8}$ to $\frac{1}{2}$	1.00	.09

## STRAIGHT SHANK MACHINE BIT FOR WOOD.



Fig. 1094.

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	3	\$0.20
$\frac{1}{4}$	3 $\frac{1}{2}$	.25
$\frac{3}{8}$	3 $\frac{1}{2}$	.30
$\frac{1}{2}$	3 $\frac{1}{2}$	.35
$\frac{1}{2}$	4	.40

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{3}{8}$	4 $\frac{1}{2}$	\$0.45
$\frac{1}{2}$	4 $\frac{1}{2}$	.50
$\frac{3}{4}$	4 $\frac{1}{2}$	.55
$\frac{1}{2}$	5	.65

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{2}$	5 $\frac{1}{2}$	\$0.70
$\frac{3}{4}$	5 $\frac{1}{2}$	.75
$\frac{1}{2}$	5 $\frac{1}{2}$	.80
$\frac{1}{2}$	6	.85
$\frac{1}{2}$	6 $\frac{1}{2}$	.95

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{2}$	6 $\frac{1}{2}$	\$1.00
$\frac{1}{2}$	6 $\frac{1}{2}$	1.15
$\frac{1}{2}$	7	1.35
$\frac{1}{2}$	7 $\frac{1}{2}$	1.65

Set No. 12,  $\frac{1}{8}$  to  $\frac{1}{2}$  inch by 32ds mounted in block.....Per set, \$7.00.

When ordering Machine Bits, state whether with Drill or Bit Point.

## TAPER LENGTH DRILL, FITTING THE PRENTICE BLACKSMITHS' DRILL PRESS NOS. 1 AND 2.



Fig. 1095.

## No. 111.

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	5 $\frac{1}{2}$	\$0.45
$\frac{1}{4}$	5 $\frac{1}{2}$	.45
$\frac{3}{8}$	5 $\frac{1}{2}$	.50
$\frac{1}{2}$	5 $\frac{1}{2}$	.55
$\frac{1}{2}$	6	.60

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{3}{8}$	6 $\frac{1}{2}$	\$0.65
$\frac{1}{2}$	6 $\frac{1}{2}$	.70
$\frac{3}{4}$	6 $\frac{1}{2}$	.75
$\frac{1}{2}$	6 $\frac{1}{2}$	.80
$\frac{1}{2}$	7	.85

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{2}$	7 $\frac{1}{2}$	\$0.90
$\frac{3}{4}$	7 $\frac{1}{2}$	.95
$\frac{1}{2}$	7 $\frac{1}{2}$	1.00
$\frac{1}{2}$	8	1.10
$\frac{1}{2}$	8 $\frac{1}{2}$	1.20

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{2}$	8 $\frac{1}{2}$	\$1.30
$\frac{1}{2}$	8 $\frac{1}{2}$	1.40
$\frac{1}{2}$	9	1.50
$\frac{1}{2}$	9 $\frac{1}{2}$	1.60
$\frac{1}{2}$	9 $\frac{1}{2}$	1.85

The above Drills have Shanks 2 $\frac{1}{2}$  inches long and  $\frac{1}{2}$  inch diameter. Diameter of Shanks fitting Press Nos. 1 and 2,  $\frac{1}{2}$  inch. Fitting Press No. 3,  $\frac{3}{4}$  inch.

## Prices, Drills Fitting the Prentice Blacksmiths' Drill Press No. 0.

## No. 111A.

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	2 $\frac{1}{2}$	\$0.25
$\frac{1}{4}$	2 $\frac{1}{2}$	.30
$\frac{3}{8}$	3 $\frac{1}{2}$	.30
$\frac{1}{2}$	3 $\frac{1}{2}$	.35

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{2}$	3 $\frac{1}{2}$	\$0.35
$\frac{3}{4}$	3 $\frac{1}{2}$	.40
$\frac{1}{2}$	4	.40
$\frac{1}{2}$	4 $\frac{1}{2}$	.40

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{2}$	4 $\frac{1}{2}$	\$0.45
$\frac{3}{4}$	4 $\frac{1}{2}$	.50
$\frac{1}{2}$	5	.55
$\frac{1}{2}$	5 $\frac{1}{2}$	.60

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{2}$	5 $\frac{1}{2}$	\$0.60
$\frac{1}{2}$	5 $\frac{1}{2}$	.70
$\frac{1}{2}$	6	.70

The above Drills have Shanks 2 $\frac{1}{2}$  inches long and  $\frac{1}{4}$  inch diameter.

## SHORT LENGTH DRILL,

Fitting Silver & Deming's and Prentice Blacksmiths' Drill Press, Nos. 1 and 2.



Fig. 1096.

## No. 112.

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	5 $\frac{1}{2}$	\$0.45
$\frac{1}{8}$	5 $\frac{1}{2}$	.50

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	6	\$0.60
$\frac{1}{8}$	6	.70

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	6	\$0.75
$\frac{1}{8}$	6	.80

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	6	\$0.85
$\frac{1}{8}$	6	.90

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	6	\$1.05

The above Drills have Shanks 2 $\frac{1}{2}$  inches long and  $\frac{1}{2}$  inch diameter.

Drills larger than  $\frac{3}{8}$  in. with Shanks  $\frac{1}{2}$  in. diameter and Drills with Shanks about  $\frac{3}{4}$  in. diameter, fitting Silver & Deming's Press Nos. 3 and 4, same price as for Coe's Drill Press. All Drills larger than  $\frac{1}{2}$  in. are 6 inches entire length. Shanks 2 $\frac{1}{2}$  inches long.

# DRILLS AND COUNTER BORES.

DRILL FITTING COE'S BLACKSMITHS' DRILL PRESS AND PRENTICE DRILL PRESS No. 3.



Fig. 1097.

No. 110.

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	4 7/8	\$0.55
$\frac{1}{4}$	5 5/8	.58
$\frac{3}{8}$	6	.60
$\frac{1}{2}$	6	.65
$\frac{5}{8}$	6	.70
$\frac{3}{4}$	6	.73
$\frac{7}{8}$	6	.75
$1$	6	.80
$1 \frac{1}{8}$	6	.85

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	6	\$0.88
$\frac{1}{4}$	6	.90
$\frac{3}{8}$	6	.93
$\frac{1}{2}$	6	.95
$\frac{5}{8}$	6	.98
$\frac{3}{4}$	6	1.00
$\frac{7}{8}$	6	1.03
$1$	6	1.05
$1 \frac{1}{8}$	6	1.10

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	6	\$1.15
$\frac{1}{4}$	6	1.20
$\frac{3}{8}$	6	1.25
$\frac{1}{2}$	6	1.30
$\frac{5}{8}$	6	1.35
$\frac{3}{4}$	6	1.40
$\frac{7}{8}$	6	1.45
$1$	6	1.55
$1 \frac{1}{8}$	6	1.60

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	6	\$1.70
$\frac{1}{4}$	6	1.80
$\frac{3}{8}$	6	1.90
$\frac{1}{2}$	6	2.00
$\frac{5}{8}$	6	2.10
$\frac{3}{4}$	6	2.20
$\frac{7}{8}$	6	2.25
$1$	6	2.30
$1 \frac{1}{8}$	6	2.40

The above drill have shanks  $2 \frac{1}{4}$  inches long and about  $\frac{1}{4}$  inch diameter.

## BIT STOCK DRILL FOR WOOD OR METAL.



Fig. 1098.

Diameter, Inches.	Price, Per Dozen.	Price, Each.
$\frac{1}{8}$	\$1.50	\$0.14
$\frac{1}{4}$	1.65	.16
$\frac{3}{8}$	2.10	.20
$\frac{1}{2}$	2.60	.24
$\frac{5}{8}$	3.10	.29
$\frac{3}{4}$	3.60	.33

Diameter, Inches.	Price, Per Dozen.	Price, Each.
$\frac{1}{8}$	\$4.10	\$0.38
$\frac{1}{4}$	4.70	.43
$\frac{3}{8}$	5.40	.48
$\frac{1}{2}$	6.30	.54
$\frac{5}{8}$	7.20	.62
$\frac{3}{4}$	8.00	.68

Diameter, Inches.	Price, Per Dozen.	Price, Each.
$\frac{1}{8}$	\$8.80	\$0.75
$\frac{1}{4}$	9.60	.82
$\frac{3}{8}$	10.30	.87
$\frac{1}{2}$	11.00	.92
$\frac{5}{8}$		1.20
$\frac{3}{4}$		1.35

Diameter, Inches.	Price, Per Dozen.	Price, Each.
$\frac{1}{8}$		\$1.50
$\frac{1}{4}$		1.65
$\frac{3}{8}$		1.80
$\frac{1}{2}$		1.95
$\frac{5}{8}$		2.15
$\frac{3}{4}$		2.35

Set No. 13. Bit Stock Drills,  $\frac{1}{8}$  to  $\frac{1}{4}$  inch by 32ds.,  $\frac{1}{8}$  to  $\frac{1}{2}$  by 16ths, boxed.

These Bit Stock Drills will fit any brace in the market, and will drill steel, iron or other metals, as well as wood. They are not injured by contact with screws or nails, and will bore straight any kind of wood without splitting it. per set, \$2.60

## STRAIGHTWAY STRAIGHT SHANK DRILL.

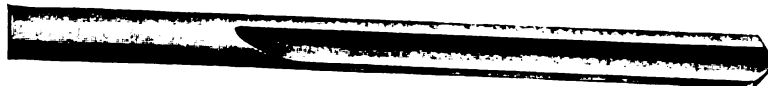


Fig. 1099.

### Jobbers and Machinists' Sets.

Diam., Inches.	Length, Inches.	Price, Per Doz.	Price, Each.
$\frac{1}{8}$	2 1/2	\$1.00	\$0.09
$\frac{1}{4}$	2 3/4	1.10	.10
$\frac{3}{8}$	2 3/4	1.20	.11
$\frac{1}{2}$	2 3/4	1.30	.12
$\frac{5}{8}$	3	1.45	.13
$\frac{3}{4}$	3 1/4	1.60	.15
$\frac{7}{8}$	3 1/4	1.80	.16

Diameter, Inches.	Length, Inches.	Price, Per Doz.	Price, Each.
$\frac{1}{8}$	3 1/4	\$2.00	\$0.18
$\frac{1}{4}$	3 1/4	2.20	.20
$\frac{3}{8}$	3 1/4	2.40	.21
$\frac{1}{2}$	3 1/4	2.65	.23
$\frac{5}{8}$	3 1/4	2.90	.26
$\frac{3}{4}$	4	3.15	.28
$\frac{7}{8}$	4 1/4	3.40	.30

Diameter, Inches.	Length, Inches.	Price, Per Doz.	Price, Each.
$\frac{1}{8}$	4 1/4	\$3.65	\$0.32
$\frac{1}{4}$	4 1/4	3.90	.35
$\frac{3}{8}$	4 1/4	4.20	.37
$\frac{1}{2}$	4 1/4	4.50	.40
$\frac{5}{8}$	4 1/4	4.80	.42
$\frac{3}{4}$	4 1/4	5.10	.45
$\frac{7}{8}$	5	5.40	.48

Diameter, Inches.	Length, Inches.	Price, Per Doz.	Price, Each.
$\frac{1}{8}$	5 1/4	\$5.70	\$0.50
$\frac{1}{4}$	5 1/4	6.00	.53
$\frac{3}{8}$	5 1/4	6.40	.55
$\frac{1}{2}$	5 1/4	6.80	.59
$\frac{5}{8}$	5 1/4	7.20	.63
$\frac{3}{4}$	5 1/4	7.50	.65
$\frac{7}{8}$	6	8.00	.70

## STRAIGHTWAY TAPER SHANK DRILL.

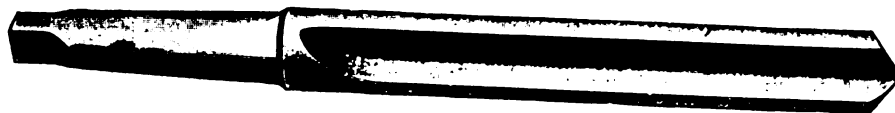


Fig. 1100.

### Taper or Straight Shanks.

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	6 1/4	\$0.60
$\frac{1}{4}$	6 1/4	.65
$\frac{3}{8}$	6 1/4	.70
$\frac{1}{2}$	6 1/4	.75
$\frac{5}{8}$	6 1/4	.80
$\frac{3}{4}$	7	.85
$\frac{7}{8}$	7 1/4	.90

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	7 1/4	\$0.95
$\frac{1}{4}$	7 1/4	1.00
$\frac{3}{8}$	8	1.10
$\frac{1}{2}$	8 1/4	1.20
$\frac{5}{8}$	8 1/4	1.30
$\frac{3}{4}$	8 1/4	1.40
$\frac{7}{8}$	9	1.50

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	9 1/4	\$1.60
$\frac{1}{4}$	9 1/4	1.70
$\frac{3}{8}$	9 1/4	1.85
$\frac{1}{2}$	9 1/4	2.00
$\frac{5}{8}$	10	2.15
$\frac{3}{4}$	10 1/4	2.30
$\frac{7}{8}$	10 1/4	2.45

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	10 1/4	\$2.60
$\frac{1}{4}$	10 1/4	2.75
$\frac{3}{8}$	10 1/4	2.90
$\frac{1}{2}$	11	3.00
$\frac{5}{8}$	11 1/4	3.20
$\frac{3}{4}$	11 1/4	3.40
$\frac{7}{8}$	11 1/4	3.60

Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	11 1/4	\$3.80
$\frac{1}{4}$	11 1/4	4.00
$\frac{3}{8}$	12	4.20
$\frac{1}{2}$	12 1/4	4.50

These Drills furnished by 64ths if so ordered.

## TAPER SHANK COUNTERBORE.

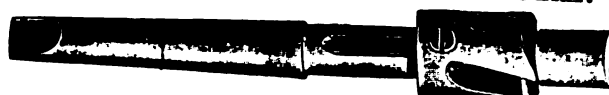


Fig. 1101.

Diam. Coun-terbore, Ins.	Diam. Guide, Inches.	Taper.	Length, Inches.	Price, Each.
$\frac{1}{8}$	$\frac{1}{8}$	No. 1 Morse	4 1/2	\$1.40
$\frac{1}{4}$	$\frac{1}{4}$	" 1 "	4 1/2	1.40
$\frac{3}{8}$	$\frac{3}{8}$	" 1 "	4 1/2	1.40
$\frac{1}{2}$	$\frac{1}{2}$	" 1 "	4 1/2	1.40
$\frac{5}{8}$	$\frac{5}{8}$	" 1 "	5 1/2	1.50
$\frac{3}{4}$	$\frac{3}{4}$	" 1 "	5 1/2	1.50

Diam. Coun-terbore, Ins.	Diam. Guide, Inches.	Taper.	Length, Inches.	Price, Each.
$\frac{1}{8}$	$\frac{1}{8}$	No. 1 Morse	5 3/4	\$1.50
$\frac{1}{4}$	$\frac{1}{4}$	" 2 "	6 1/4	1.80
$\frac{3}{8}$	$\frac{3}{8}$	" 2 "	6 1/4	1.80
$\frac{1}{2}$	$\frac{1}{2}$	" 2 "	6 1/4	1.80
$\frac{5}{8}$	$\frac{5}{8}$	" 2 "	6 1/4	1.80
$\frac{3}{4}$	$\frac{3}{4}$	" 2 "	6 1/4	2.00

Diam. Coun-terbore, Ins.	Diam. Guide, Inches.	Taper.	Length, Inches.	Price, Each.
$\frac{1}{8}$	$\frac{1}{8}$	No. 2 Morse	6 3/4	\$2.00
$\frac{1}{4}$	$\frac{1}{4}$	" 3 "	7 1/4	2.20
$\frac{3}{8}$	$\frac{3}{8}$	" 3 "	7 1/4	2.40
$\frac{1}{2}$	$\frac{1}{2}$	" 3 "	7 1/4	2.60
$\frac{5}{8}$	$\frac{5}{8}$	" 3 "	7 1/4	2.80

The Counterbores are furnished to the diameters of the Heads of the Cap Screws in use, and the Guide Bushings to the diameters the body size of the Screws corresponding

# COUNTERSINKS AND REAMERS.

## LIGHTNING COUNTERSINK.

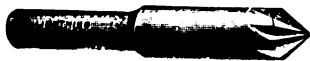


Fig. 1102.

60 or 72 degrees for bolt or screw heads. For Lathes and Drilling Machines. Shanks are made  $\frac{1}{2}$  and  $\frac{3}{4}$  inch diameter.  
Each.....\$0.50

## LIGHTNING COUNTERSINK.



Fig. 1103.

60 or 72 degrees for bolt or screw heads. For Bit Braces and Drilling Machines.  
Each.....\$0.50

## CENTER REAMER.



Fig. 1104.

For Lathes—accurately made of the best steel and of most approved form.  
Each.....\$0.50

## SQUARE REAMER.

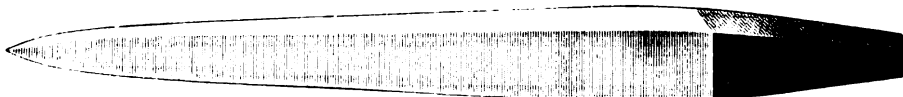


Fig. 1105.

No. 1. Cast steel ..... Per dozen, \$1.50  
" 2. Extra quality tool steel, warranted..... " 2.00

## WHEELER'S COUNTERSINK, WITH GAUGE.

For Wood.

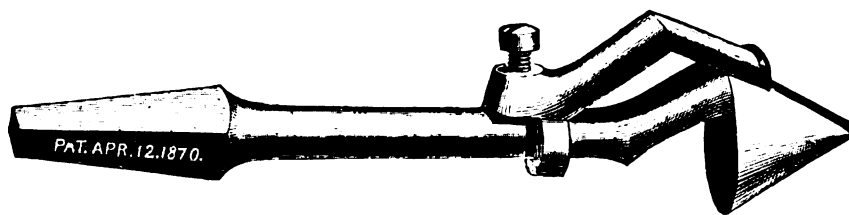


Fig. 1106.

This Countersink may be used either with or without gauge as desired.  
No. 4. With gauge (as shown in cut)..... Per dozen, \$4.50  
" 5. Without gauge..... " 3.00

## BIT STOCK COUNTERSINK.



Fig. 1107.

Diameter, Inches.	Length, Inches.	Price, Each.	Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{3}{8}$	$4\frac{1}{4}$	\$0.50	$\frac{3}{4}$	5	\$0.90
$\frac{1}{2}$	$4\frac{1}{4}$	.60	$\frac{7}{8}$	5	1.05
$\frac{5}{8}$	$4\frac{1}{4}$	.75	1	5	1.20

## COUNTERSINK GIMLET BIT.



Fig. 1108.

Nos.	Boring Inches.	Price, Per Dozen.	Nos.	Boring Inches.	Price, Per Dozen.
0	$\frac{1}{2} \times \frac{1}{2}$	\$2.00	3	$\frac{3}{4} \times 1\frac{1}{4}$	\$2.00
1	$\frac{3}{4} \times 1$	2.00	4	$\frac{1}{2} \times 1\frac{1}{2}$	2.00
2	$\frac{1}{2} \times 1\frac{1}{2}$	2.00	Assorted Sizes.		2.00

## SPIRAL COUNTERSINK.

For Wood.



Fig. 1109.

No. 6. Best tool steel ..... Per dozen, \$2.00

## HALF ROUND COUNTERSINK.

For Metal.



Fig. 1111.

No. 8. Best tool steel..... Per dozen, \$2.00

## SNAIL COUNTERSINK.

For Wood.



Fig. 1110.

No. 7. Cast steel..... Per dozen, \$1.00

## OCTAGON PATENT ROSE COUNTERSINK.

For Brass.

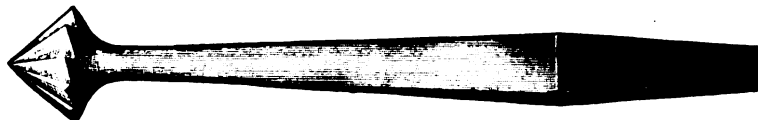


Fig. 1112.

No. 9. Cast steel..... Per dozen, \$1.00

## FLAT COUNTERSINK.

For Iron.

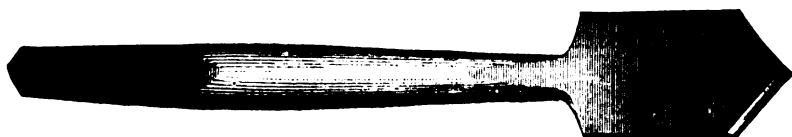


Fig. 1113.

No. 10. Cast steel ..... Per dozen, \$1.00

## ROUND SHANK ROSE COUNTERSINK.

For Brass.



Fig. 1114.

No. 11. Cast steel ..... Per dozen, \$1.00

## REAMERS.

## LIGHTNING TAPER REAMERS.

For Bit Brace.



Fig. 1115.

Diameter, inches.....	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$
Price, each.....	\$0.45	.50	.55	.60	.70
Diameter, inches.....	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$
Price, each.....	\$0.80	.90	1.05	1.20	
Set of 9 sizes, $\frac{1}{8}$ to $\frac{3}{4}$ inch, in case.....	\$7.25				

MORSE TAPER REAMER.  
For Bit Brace.

Fig. 1117.

Diameter Inches.....	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$
Price, each.....	\$0.45	.50	.55	.60	.70
Diameter, Inches.....	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$
Price, each.....	\$0.80	.90	1.05	1.20	

For Machine.



Fig. 1116.

Diameter, inches.....	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$
Price, each.....	\$0.55	.60	.65	.70	.75
Diameter, inches.....	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$
Price, each.....	\$0.80	1.00	1.20	1.40	

Shanks are  $\frac{1}{4}$  inch in diameter.

MORSE TAPER REAMER.



Fig. 1118.

For Reamer, Taper of Morse Drill Socket No. 1.....	each, \$2.40
For Reamer, Taper of Morse Drill Socket No. 2.....	" 2.80
For Reamer, Taper of Morse Drill Socket No. 3.....	" 3.40
For Reamer, Taper of Morse Drill Socket No. 4.....	" 4.20
For Reamer, Taper of Morse Drill Socket No. 5.....	" 6.60

## Dimensions of Morse Taper Reamers, Fig. 1118.

No. of Reamer.	Full Length.	Length of Flute.	Taper.	No. of Reamer.	Full Length.	Length of Flute.	Taper.
Taper No. 1.....	$5\frac{7}{8}$ inches	$3\frac{1}{2}$ inches	.5415 by .365	Taper No. 4.....	9 inches	$5\frac{1}{2}$ inches	1.303 by 1.021
Taper No. 2.....	$7\frac{1}{2}$ "	$4\frac{1}{2}$ "	.797 by .572	Taper No. 5.....	$9\frac{7}{8}$ "	$5\frac{7}{8}$ "	1.786 by 1.480
Taper No. 3.....	$8\frac{1}{4}$ "	5 "	1.025 by .775	Taper No. 6.....	12 "	9 "	2.597 by 2.129

## SOLID REAMER.

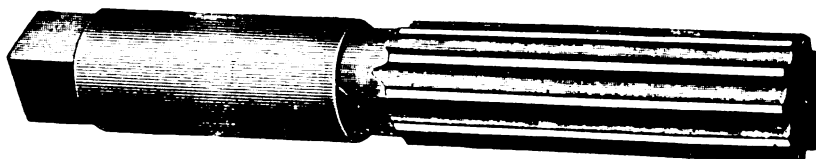


Fig. 1119.

No. 115 Jobber Set.

Diameter, Inches.	Full Length, Inches.	Length of Flute, Inches.	Price, Each.	Diameter, Inches.	Full Length, Inches.	Length of Flute, Inches.	Price, Each.
$\frac{1}{8}$	3	$1\frac{1}{2}$	\$1.00	$1\frac{1}{8}$	$11\frac{1}{2}$	5	\$4.00
$\frac{3}{16}$	$3\frac{1}{2}$	$1\frac{3}{4}$	1.10	$1\frac{3}{8}$	$11\frac{3}{4}$	$5\frac{1}{2}$	4.30
$\frac{1}{4}$	$3\frac{3}{4}$	$1\frac{7}{8}$	1.20	$1\frac{1}{2}$	12	6	4.60
$\frac{5}{16}$	$4\frac{1}{4}$	2	1.30	$1\frac{3}{4}$	$12\frac{1}{4}$	$6\frac{1}{4}$	4.90
$\frac{3}{8}$	4	$2\frac{1}{4}$	1.40	$1\frac{7}{8}$	$12\frac{3}{4}$	$6\frac{3}{4}$	5.20
$\frac{7}{16}$	$4\frac{1}{2}$	$2\frac{1}{2}$	1.50	$2$	$12\frac{1}{2}$	$6\frac{1}{2}$	5.60
$\frac{1}{2}$	5	$2\frac{3}{4}$	1.60	$2\frac{1}{8}$	$12\frac{3}{8}$	$6\frac{3}{8}$	6.00
$\frac{9}{16}$	$5\frac{1}{4}$	3	1.75	$2\frac{3}{8}$	13	$6\frac{3}{4}$	6.40
$\frac{5}{8}$	6	$3\frac{1}{4}$	1.90	$2\frac{1}{2}$	13	$6\frac{1}{2}$	6.80
$\frac{11}{16}$	$6\frac{1}{2}$	$3\frac{3}{4}$	2.00	$2\frac{7}{8}$	13	$6\frac{3}{4}$	7.20
$\frac{3}{4}$	7	$3\frac{1}{2}$	2.20	$3$	$13\frac{1}{4}$	$6\frac{3}{4}$	7.60
$\frac{13}{16}$	$7\frac{1}{4}$	$4\frac{1}{4}$	2.40	$3\frac{1}{8}$	$13\frac{3}{8}$	$6\frac{3}{8}$	8.00
$\frac{7}{8}$	$8\frac{1}{4}$	$4\frac{3}{4}$	2.60	$3\frac{3}{8}$	$13\frac{1}{2}$	$6\frac{1}{2}$	8.40
$\frac{15}{16}$	$9\frac{1}{4}$	$5\frac{1}{4}$	2.80	$3\frac{7}{8}$	14	7	8.80
1	$10\frac{1}{4}$	$5\frac{3}{4}$	3.10	$4$	14	7	9.20
			3.40				9.60
			3.70				

No. 116 Short Set.

Diameter, Inches.	Full Length, Inches.	Length of Flute, Inches.	Price, Each.	Diameter, Inches.	Full Length, Inches.	Length of Flute, Inches.	Price, Each.
$\frac{1}{8}$	3	$2\frac{3}{4}$	\$1.30	$1\frac{1}{8}$	9	$4\frac{1}{4}$	\$3.90
$\frac{3}{16}$	$3\frac{1}{2}$	$2\frac{1}{2}$	1.40	$1\frac{3}{8}$	$9\frac{1}{4}$	5	4.10
$\frac{1}{4}$	$3\frac{3}{4}$	$2\frac{3}{4}$	1.50	$1\frac{1}{2}$	$9\frac{3}{4}$	$5\frac{1}{4}$	4.35
$\frac{5}{16}$	4	$2\frac{1}{2}$	1.60	$1\frac{3}{4}$	10	$5\frac{3}{4}$	4.70
$\frac{3}{8}$	$4\frac{1}{4}$	$2\frac{3}{4}$	1.70	$1\frac{7}{8}$	$10\frac{1}{4}$	$5\frac{3}{4}$	5.20
$\frac{7}{16}$	$4\frac{1}{2}$	$2\frac{3}{4}$	1.80	$2$	$10\frac{3}{4}$	$5\frac{3}{4}$	5.70
$\frac{1}{2}$	5	$2\frac{3}{4}$	1.90	$2\frac{1}{8}$	$10\frac{3}{4}$	$5\frac{3}{4}$	6.20
$\frac{9}{16}$	$5\frac{1}{4}$	$2\frac{3}{4}$	2.05	$2\frac{3}{8}$	11	6	6.70
$\frac{5}{8}$	$5\frac{3}{4}$	3	2.20	$2\frac{1}{2}$	$11\frac{1}{4}$	$6\frac{1}{4}$	7.10
$\frac{11}{16}$	$6\frac{1}{4}$	$3\frac{1}{4}$	2.35	$2\frac{7}{8}$	$11\frac{3}{4}$	$6\frac{1}{4}$	7.50
$\frac{3}{4}$	$6\frac{3}{4}$	$3\frac{3}{4}$	2.50	$3$	$11\frac{3}{4}$	$6\frac{1}{4}$	7.90
$\frac{13}{16}$	$7\frac{1}{4}$	$3\frac{3}{4}$	2.70	$3\frac{1}{8}$	12	$6\frac{1}{4}$	8.30
$\frac{7}{8}$	$7\frac{3}{4}$	$3\frac{3}{4}$	2.90				
$\frac{15}{16}$	$8\frac{1}{4}$	$4\frac{1}{4}$	3.10				
1	$8\frac{3}{4}$	$4\frac{1}{4}$	3.30				
			3.50				
			3.70				

Reamers of any style, size or length made to order. If for Brass, please so advise.

## Prices of Solid Reamers in Sets.

Jobber Set No. 1, $\frac{1}{4}$ to 1 inch diameter.....	per set, \$30.00	Short Set No. 1, $\frac{1}{4}$ to 1 inch diameter.....	per set, \$25.50
Jobber Set No. 2, $\frac{1}{4}$ to $1\frac{1}{4}$ ".....	" 48.00	Short Set No. 2, $\frac{1}{4}$ to $1\frac{1}{4}$ ".....	" 39.00
Jobber Set No. 3, $\frac{1}{4}$ to $1\frac{1}{2}$ ".....	" 70.00	Short Set No. 3, $\frac{1}{4}$ to $1\frac{1}{2}$ inches diameter.....	" 56.00

## Prices of Black Walnut Cases for Jobbers or Short Sets.

For No. 1 set.....	\$3.75	For No. 2 set.....	\$4.25	For No. 3 set.....	\$4.50
--------------------	--------	--------------------	--------	--------------------	--------

TAPER ROUGHING REAMER.



Fig. 1120.

Made to order any size desired. Prices on application.

TAPER FINISHING REAMER.

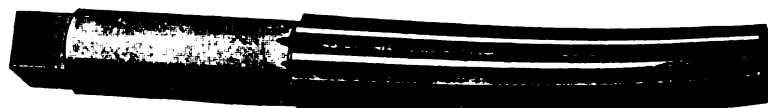


Fig. 1121.

Made to order any size desired. Prices on application.



# REAMERS.

## SOLID SPIRAL FLUTED REAMER.

## STANDARD TAPER-PIN REAMER.

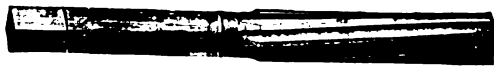


Fig. 1122.

Prices, Solid Spiral Fluted Reamers, Fig. 1122.

Diameter, Inches.	Full Length.	Length of Flute.	Price, Each.
$\frac{1}{8}$	3 $\frac{1}{2}$ ins.	1 $\frac{1}{2}$ ins.	\$1.40
$\frac{1}{4}$	4 "	2 "	1.50
$\frac{3}{8}$	4 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	1.60
$\frac{1}{2}$	5 "	2 $\frac{3}{4}$ "	1.75
$\frac{5}{8}$	5 $\frac{1}{2}$ "	3 "	1.90
$\frac{3}{4}$	6 "	3 $\frac{1}{4}$ "	2.00
$\frac{7}{8}$	6 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "	2.20

Diameter, Inches.	Full Length.	Length of Flute.	Price, Each.
$\frac{1}{8}$	7 ins.	3 $\frac{1}{2}$ ins.	\$2.40
$\frac{1}{4}$	7 $\frac{1}{2}$ "	3 $\frac{3}{4}$ "	2.60
$\frac{3}{8}$	8 "	4 "	2.80
$\frac{1}{2}$	8 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "	3.10
$\frac{5}{8}$	9 "	4 $\frac{3}{4}$ "	3.40
$\frac{3}{4}$	9 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "	3.70
$\frac{7}{8}$	10 "	5 "	4.00

Fig. 1123.

Diameter, Inches.	Full Length.	Length of Flute.	Price, Each.
$\frac{1}{8}$	10 $\frac{1}{2}$ ins.	5 $\frac{1}{2}$ ins.	\$4.30
$\frac{1}{4}$	11 "	5 $\frac{3}{4}$ "	4.60
$\frac{3}{8}$	11 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "	4.90
$\frac{1}{2}$	12 "	6 "	5.20
$\frac{5}{8}$	12 $\frac{1}{2}$ "	6 $\frac{1}{4}$ "	5.60
$\frac{3}{4}$	13 "	6 $\frac{1}{2}$ "	6.00
$\frac{7}{8}$	13 "	6 $\frac{3}{4}$ "	6.40

Prices, Standard Taper-Pin Reamers, Fig. 1123.

Size Nos.	Diameter, Small End.	Full Length.	Length of Flute.	Price, Each.
0	.125 inch.	2 $\frac{1}{2}$ ins.	1 $\frac{1}{2}$ ins.	\$1.00
1	.146 "	2 $\frac{1}{2}$ "	1 $\frac{3}{4}$ "	1.00
2	.162 "	3 "	2 "	1.25
3	.183 "	3 $\frac{1}{2}$ "	2 $\frac{1}{4}$ "	1.50

Size Nos.	Diameter, Small End.	Full Length.	Length of Flute.	Price, Each.
4	.208 inch.	4 ins.	2 $\frac{1}{2}$ ins.	\$1.75
5	.240 "	4 $\frac{1}{2}$ "	3 "	2.00
6	.279 "	5 "	3 $\frac{1}{2}$ "	2.25
7	.331 "	6 "	4 $\frac{1}{2}$ "	2.50

Size Nos.	Diameter, Small End.	Full Length.	Length of Flute.	Price, Each.
8	.398 inch.	6 $\frac{1}{2}$ ins.	5 $\frac{1}{2}$ ins.	\$3.00
9	.482 "	8 "	6 $\frac{1}{2}$ "	3.50
10	.581 "	9 "	7 "	4.00

These Reamers have the same taper ( $\frac{1}{4}$  inch per foot), and each will overlay in convenient measure the size next smaller. Special sizes made to order.

## STANDARD TAPER REAMER FOR BRIDGE BUILDERS.

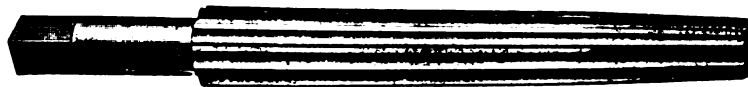


Fig. 1124.

Diameter, Inches.	Full Length.	Length of Flute.	Length, Tapered End.	Price, Each.
$\frac{1}{8}$	9 $\frac{1}{2}$ ins.	7 ins.	2 ins.	\$2.80
$\frac{1}{4}$	9 $\frac{1}{2}$ "	7 "	2 "	2.90
$\frac{3}{8}$	9 $\frac{1}{2}$ "	7 "	2 "	3.00
$\frac{1}{2}$	9 $\frac{1}{2}$ "	7 "	2 "	3.10
$\frac{5}{8}$	9 $\frac{1}{2}$ "	7 "	2 "	3.30
$\frac{3}{4}$	9 $\frac{1}{2}$ "	7 "	2 "	3.50
$\frac{7}{8}$	9 $\frac{1}{2}$ "	7 "	2 "	3.70

Diameter, Inches.	Full Length.	Length of Flute.	Length, Tapered End.	Price, Each.
$\frac{1}{8}$	9 $\frac{1}{2}$ ins.	7 ins.	2 ins.	\$3.90
$\frac{1}{4}$	9 $\frac{1}{2}$ "	7 "	2 "	4.00
$\frac{3}{8}$	9 $\frac{1}{2}$ "	7 "	2 "	2.80
$\frac{1}{2}$	9 $\frac{1}{2}$ "	7 "	2 "	3.00
$\frac{5}{8}$	9 $\frac{1}{2}$ "	7 "	2 "	3.30
$\frac{3}{4}$	9 $\frac{1}{2}$ "	7 "	2 "	3.70
$\frac{7}{8}$	9 $\frac{1}{2}$ "	7 "	2 "	4.00

Special sizes made to order.

## STANDARD TAPER REAMER FOR LOCOMOTIVE WORK.



Fig. 1125.

Taper  $\frac{1}{8}$  inch, or  $\frac{1}{4}$  inch per foot, as in use by railway companies. The following list embraces reamers tapering  $\frac{1}{4}$  inch per foot.

Diam., End, Inches.	Full Length.	Length of Flute.	Price, Each.
$\frac{1}{8}$	5 $\frac{1}{8}$ ins.	4 ins.	\$2.20
$\frac{1}{4}$	5 $\frac{1}{8}$ "	4 "	2.20
$\frac{3}{8}$	5 $\frac{1}{8}$ "	4 "	2.25
$\frac{1}{2}$	5 $\frac{1}{8}$ "	4 "	2.25
$\frac{5}{8}$	6 $\frac{1}{8}$ "	5 "	2.30
$\frac{3}{4}$	6 $\frac{1}{8}$ "	5 "	2.40
$\frac{7}{8}$	7 $\frac{1}{8}$ "	6 "	2.55
$\frac{1}{8}$	7 $\frac{1}{8}$ "	6 "	2.70
$\frac{1}{4}$	8 $\frac{1}{8}$ "	7 "	3.00

Diam., End, Inches.	Full Length.	Length of Flute.	Price, Each.
$\frac{1}{8}$	9 $\frac{1}{8}$ ins.	8 ins.	\$3.20
$\frac{1}{4}$	9 $\frac{1}{8}$ "	8 "	3.50
$\frac{3}{8}$	9 $\frac{1}{8}$ "	8 "	3.80
$\frac{1}{2}$	9 $\frac{1}{8}$ "	8 "	4.10
$\frac{5}{8}$	11 $\frac{1}{8}$ "	9 "	4.50
$\frac{3}{4}$	11 $\frac{1}{8}$ "	9 "	4.80
$\frac{7}{8}$	11 $\frac{1}{8}$ "	9 "	5.10
$\frac{1}{8}$	11 $\frac{1}{8}$ "	9 "	5.40
$\frac{1}{4}$	11 $\frac{1}{8}$ "	9 "	5.70

Diam., End, Inches.	Full Length.	Length of Flute.	Price, Each.
$\frac{1}{8}$	12 $\frac{1}{8}$ ins.	10 ins.	\$6.20
$\frac{1}{4}$	12 $\frac{1}{8}$ "	10 "	6.60
$\frac{3}{8}$	12 $\frac{1}{8}$ "	10 "	7.00
$\frac{1}{2}$	14 $\frac{1}{8}$ "	12 "	7.60
$\frac{5}{8}$	14 $\frac{1}{8}$ "	12 "	8.00
$\frac{3}{4}$	14 $\frac{1}{8}$ "	12 "	8.50
$\frac{7}{8}$	14 $\frac{1}{8}$ "	12 "	9.00

Special Reamers, or of other taper per foot than as specified, made to order.

## SELF-FEEDING REAMER.



Fig. 1126.

Diameter, Inches.	Full Length.	Length of Flute.	Price, Each.
$\frac{1}{8}$	4 ins.	2 ins.	\$1.40
$\frac{1}{4}$	4 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	1.50
$\frac{3}{8}$	5 "	2 $\frac{3}{4}$ "	1.60
$\frac{1}{2}$	5 $\frac{1}{2}$ "	2 $\frac{3}{4}$ "	1.75
$\frac{5}{8}$	6 "	3 "	1.90
$\frac{3}{4}$	6 $\frac{1}{2}$ "	3 $\frac{1}{4}$ "	2.00
$\frac{7}{8}$	7 "	3 $\frac{1}{2}$ "	2.20
$\frac{1}{8}$	7 $\frac{1}{2}$ "	3 $\frac{3}{4}$ "	2.40
$\frac{1}{4}$	8 $\frac{1}{2}$ "	4 $\frac{1}{4}$ "	2.60
$\frac{3}{8}$	9 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "	2.80

Diameter, Inches.	Full Length.	Length of Flute.	Price, Each.
$\frac{1}{8}$	9 $\frac{1}{2}$ ins.	4 $\frac{1}{2}$ ins.	\$3.10
$\frac{1}{4}$	10 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "	3.40
$\frac{3}{8}$	10 $\frac{1}{2}$ "	5 $\frac{3}{4}$ "	3.70
$\frac{1}{2}$	11 $\frac{1}{2}$ "	5 $\frac{3}{4}$ "	4.00
$\frac{5}{8}$	11 $\frac{1}{2}$ "	5 $\frac{3}{4}$ "	4.30
$\frac{3}{4}$	12 "	6 "	4.60
$\frac{7}{8}$	12 $\frac{1}{2}$ "	6 $\frac{1}{4}$ "	4.90
$\frac{1}{8}$	12 $\frac{1}{2}$ "	6 $\frac{1}{4}$ "	5.20
$\frac{1}{4}$	12 $\frac{1}{2}$ "	6 $\frac{1}{4}$ "	5.60
$\frac{3}{8}$	12 $\frac{1}{2}$ "	6 $\frac{1}{4}$ "	6.00

Diameter, Inches.	Full Length.	Length of Flute.	Price, Each.
$\frac{1}{8}$	13 ins.	6 $\frac{1}{2}$ ins.	\$6.40
$\frac{1}{4}$	13 "	6 $\frac{1}{2}$ "	6.80
$\frac{3}{8}$	13 "	6 $\frac{1}{2}$ "	7.20
$\frac{1}{2}$	13 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "	7.60
$\frac{5}{8}$	13 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "	8.00
$\frac{3}{4}$	13 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "	8.40
$\frac{7}{8}$	14 "	7 "	8.80
$\frac{1}{8}$	14 "	7 "	9.20
$\frac{1}{4}$	14 "	7 "	9.60

## REAMERS.

## FLUTED SHELL REAMER.

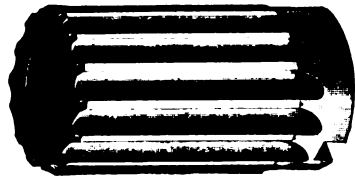


Fig. 1127.

Diameter, Inches.	Full Length.	Size Hole.	Price, Each.	Diameter, Inches.	Full Length.	Size Hole.	Price, Each.
$\frac{1}{8}$	1 $\frac{1}{2}$ ins.	$\frac{1}{8}$ in.	\$1.10	$\frac{1}{8}$	2 $\frac{1}{2}$ ins.	$\frac{1}{8}$ in.	\$1.80
$\frac{1}{4}$	1 $\frac{1}{2}$ "	"	1.10	$\frac{1}{4}$	2 $\frac{1}{2}$ "	"	1.80
$\frac{3}{8}$	1 $\frac{1}{2}$ "	"	1.20	$\frac{3}{8}$	2 $\frac{1}{2}$ "	"	1.90
$\frac{1}{2}$	1 $\frac{1}{2}$ "	"	1.30	$\frac{1}{2}$	2 $\frac{1}{2}$ "	"	2.00
$\frac{5}{8}$	2 "	"	1.40	$\frac{5}{8}$	2 $\frac{1}{2}$ "	"	2.20
$\frac{3}{4}$	2 "	"	1.50	$\frac{3}{4}$	3 "	"	2.40
$\frac{7}{8}$	2 "	"	1.60	$\frac{7}{8}$	3 "	"	2.60
1	2 "	"	1.60	1	3 "	"	2.80
$1\frac{1}{8}$	2 "	"	1.60	$1\frac{1}{8}$	3 "	"	3.00
$1\frac{1}{4}$	2 "	"	1.60	$1\frac{1}{4}$	3 "	"	3.20
$1\frac{3}{8}$	2 "	"	1.70	$1\frac{3}{8}$	3 "	"	3.50
$1\frac{1}{2}$	2 "	"	1.70	$1\frac{1}{2}$	3 $\frac{1}{2}$ "	1 "	3.80

## ROSE SHELL REAMER.

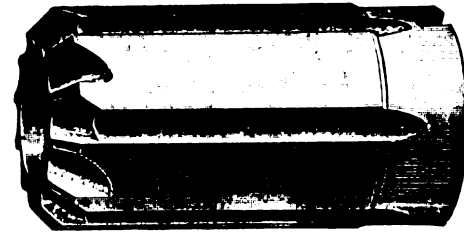


Fig. 1128.

Diameter, Inches.	Full Length.	Size Hole.	Price, Each.	Diameter, Inches.	Full Length.	Size Hole.	Price, Each.
$\frac{1}{8}$	3 $\frac{1}{2}$ ins.	1 in.	\$4.10	$\frac{1}{8}$	3 $\frac{1}{2}$ ins.	1 in.	\$6.80
$\frac{1}{4}$	3 $\frac{1}{2}$ "	"	4.40	$\frac{1}{4}$	3 $\frac{1}{2}$ "	"	7.00
$\frac{3}{8}$	3 $\frac{1}{2}$ "	"	4.70	$\frac{3}{8}$	3 $\frac{1}{2}$ "	"	7.30
$\frac{1}{2}$	3 $\frac{1}{2}$ "	"	5.00	$\frac{1}{2}$	3 $\frac{1}{2}$ "	"	7.60
$\frac{5}{8}$	3 $\frac{1}{2}$ "	"	5.20	$\frac{5}{8}$	3 $\frac{1}{2}$ "	"	8.00
$\frac{3}{4}$	3 $\frac{1}{2}$ "	"	5.40	$\frac{3}{4}$	3 $\frac{1}{2}$ "	"	8.40
$\frac{7}{8}$	3 $\frac{1}{2}$ "	"	5.60	$\frac{7}{8}$	3 $\frac{1}{2}$ "	"	8.80
1	3 $\frac{1}{2}$ "	"	5.80	1	3 $\frac{1}{2}$ "	"	9.20
$1\frac{1}{8}$	3 $\frac{1}{2}$ "	"	6.00	$1\frac{1}{8}$	3 $\frac{1}{2}$ "	"	9.60
$1\frac{1}{4}$	3 $\frac{1}{2}$ "	"	6.20				
$1\frac{3}{8}$	3 $\frac{1}{2}$ "	"	6.40				
$1\frac{1}{2}$	3 $\frac{1}{2}$ "	"	6.60				

Shell Reamers of any size or length made to order.

## ARBOR FOR SHELL REAMERS.



Fig. 1129.

Nos.	Fitting Reamers, Inches.	Full Length.	Price, Each.	Nos.	Fitting Reamers, Inches.	Full Length.	Price, Each.	Nos.	Fitting Reamers, Inches.	Full Length.	Price, Each.
1	$\frac{1}{8}$ to $\frac{3}{8}$	6 ins.	\$1.20	5	$\frac{1}{4}$ to $\frac{1}{2}$	9 $\frac{1}{2}$ ins.	\$2.00	9	$2\frac{1}{8}$ to $2\frac{1}{2}$	13 ins.	\$3.00
2	$\frac{3}{8}$ to $\frac{7}{8}$	7 "	1.40	6	$\frac{1}{2}$ to $1\frac{1}{8}$	10 "	2.20	10	$2\frac{1}{2}$ to 3	14 "	3.40
3	$\frac{7}{8}$ to $1\frac{1}{8}$	8 "	1.60	7	$1\frac{1}{8}$ to $1\frac{1}{2}$	11 "	2.40				
4	$1\frac{1}{8}$ to $1\frac{1}{4}$	9 "	1.80	8	$1\frac{1}{4}$ to 2	12 "	2.70				

## FLUTED CHUCKING REAMER.



Fig. 1130.

## ROSE CHUCKING REAMER.

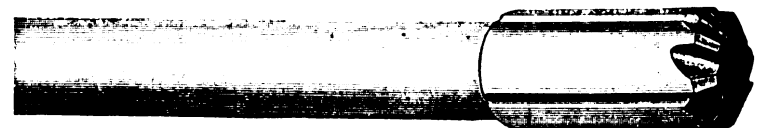


Fig. 1131.

## Prices, Fluted Chucking Reamers, Fig. 1130.

Diameter, Inches.	Full Length.	Length of Flute.	Price, Each.	Diameter, Inches.	Full Length.	Length of Flute.	Price, Each.	Diameter, Inches.	Full Length.	Length of Flute.	Price, Each.
$\frac{1}{8}$ less .005	6 ins.	1 in.	\$0.90	$\frac{1}{8}$ less .005	10 ins.	1 $\frac{1}{2}$ ins.	\$2.00	$\frac{1}{8}$ less .005	12 $\frac{1}{2}$ ins.	2 $\frac{1}{2}$ ins.	\$3.50
$\frac{1}{4}$ less .005	6 "	"	1.00	$\frac{1}{4}$ less .005	10 "	1 $\frac{1}{2}$ "	2.15	$\frac{1}{4}$ less .005	12 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	3.65
$\frac{3}{8}$ less .005	7 "	1 "	1.10	$\frac{3}{8}$ less .005	10 $\frac{1}{2}$ "	1 $\frac{3}{4}$ "	2.30	$\frac{3}{8}$ less .005	13 "	2 $\frac{3}{4}$ "	3.80
$\frac{1}{2}$ less .005	7 "	1 "	1.20	$\frac{1}{2}$ less .005	10 $\frac{1}{2}$ "	1 $\frac{3}{4}$ "	2.45	$\frac{1}{2}$ less .005	13 "	2 $\frac{3}{4}$ "	4.00
$\frac{5}{8}$ less .005	8 "	1 $\frac{1}{4}$ "	1.30	$\frac{5}{8}$ less .005	11 "	1 $\frac{3}{4}$ "	2.60	$\frac{5}{8}$ less .005	13 $\frac{1}{2}$ "	2 $\frac{3}{4}$ "	4.20
$\frac{3}{4}$ less .005	8 "	1 $\frac{1}{4}$ "	1.40	$\frac{3}{4}$ less .005	11 "	1 $\frac{3}{4}$ "	2.75	$\frac{3}{4}$ less .005	13 $\frac{1}{2}$ "	2 $\frac{3}{4}$ "	4.40
$\frac{7}{8}$ less .005	9 "	1 $\frac{1}{2}$ "	1.50	$\frac{7}{8}$ less .005	11 $\frac{1}{2}$ "	1 $\frac{3}{4}$ "	2.90	$\frac{7}{8}$ less .005	13 $\frac{1}{2}$ "	2 $\frac{3}{4}$ "	4.60
1 less .005	9 "	1 $\frac{1}{2}$ "	1.60	1 less .005	11 $\frac{1}{2}$ "	1 $\frac{3}{4}$ "	3.05	1 less .005	14 "	2 $\frac{3}{4}$ "	4.80
$1\frac{1}{8}$ less .005	9 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "	1.70	$1\frac{1}{8}$ less .005	12 "	2 "	3.20	$1\frac{1}{8}$ less .005	14 "	2 $\frac{3}{4}$ "	5.00
$1\frac{1}{4}$ less .005	9 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "	1.85	$1\frac{1}{4}$ less .005	12 "	2 "	3.35				

The above Reamers are finished  $\frac{1}{32}$  of an inch smaller than Whitworth's standard gauges.

## Prices, Rose Chucking Reamers, Fig. 1131.

Diameter, Inches.	Full Length.	Price, Each.	Diameter, Inches.	Full Length.	Price, Each.	Diameter, Inches.	Full Length.	Price, Each.	Diameter, Inches.	Full Length.	Price, Each.
$\frac{1}{8}$	6 ins.	\$0.80	$\frac{1}{8}$	9 $\frac{1}{2}$ ins.	\$1.60	$\frac{1}{8}$	11 $\frac{1}{2}$ ins.	\$2.70	$\frac{1}{8}$	13 $\frac{1}{2}$ ins.	\$3.90
$\frac{1}{4}$	6 "	.90	$\frac{1}{4}$	9 $\frac{1}{2}$ "	1.70	$\frac{1}{4}$	11 $\frac{1}{2}$ "	2.85	$\frac{1}{4}$	13 $\frac{1}{2}$ "	4.05
$\frac{3}{8}$	7 "	1.00	$\frac{3}{8}$	10 "	1.80	$\frac{3}{8}$	12 "	3.00	$\frac{3}{8}$	14 "	4.20
$\frac{1}{2}$	7 "	1.10	$\frac{1}{2}$	10 $\frac{1}{2}$ "	1.95	$\frac{1}{2}$	12 "	3.15	$\frac{1}{2}$	14 "	4.40
$\frac{5}{8}$	8 "	1.20	$\frac{5}{8}$	10 $\frac{1}{2}$ "	2.10	$\frac{5}{8}$	12 $\frac{1}{2}$ "	3.30	$\frac{5}{8}$	14 "	4.60
$\frac{3}{4}$	8 "	1.30	$\frac{3}{4}$	10 $\frac{1}{2}$ "	2.25	$\frac{3}{4}$	12 $\frac{1}{2}$ "	3.45			
$\frac{7}{8}$	9 "	1.40	$\frac{7}{8}$	11 "	2.40	$\frac{7}{8}$	13 "	3.60			
$1$	9 "	1.50	$1$	11 "	2.55	$1$	13 "	3.75			

Reamers of any style, size or length made to order. If Reamers are wanted for brass, please so advise.

# REAMERS AND MANDRELS.

## COMMON SENSE EXPANSION REAMER.

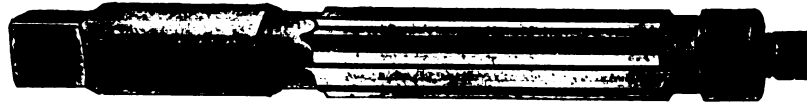


Fig. 1132.

Diameter, Inches.	Full Length.	Length of Flute.	Price, Each.	Diameter, Inches.	Full Length.	Length of Flute.	Price, Each.	Diameter, Inches.	Full Length.	Length of Flute.	Price, Each.
$\frac{1}{8}$	3 $\frac{1}{2}$ ins.	1 $\frac{1}{2}$ ins.	\$1.75	$\frac{1}{8}$	8 $\frac{1}{2}$ ins.	4 $\frac{1}{2}$ ins.	\$4.25	$\frac{1}{8}$	11 $\frac{1}{2}$ ins.	6 $\frac{1}{2}$ ins.	\$9.00
$\frac{1}{4}$	4 "	2 "	1.85	$\frac{1}{4}$	9 "	5 "	4.60	$\frac{1}{4}$	11 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "	9.50
$\frac{3}{8}$	4 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	2.00	$\frac{3}{8}$	9 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "	5.00	$\frac{3}{8}$	11 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "	10.00
$\frac{1}{2}$	5 "	2 $\frac{1}{2}$ "	2.15	$\frac{1}{2}$	10 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "	5.35	$\frac{1}{2}$	11 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "	10.50
$\frac{5}{8}$	5 $\frac{1}{2}$ "	3 "	2.35	$\frac{5}{8}$	10 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "	5.70	$\frac{5}{8}$	11 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "	11.00
$\frac{3}{4}$	6 "	3 $\frac{1}{2}$ "	2.50	$\frac{3}{4}$	10 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "	6.10	$\frac{3}{4}$	12 "	7 "	11.50
$\frac{7}{8}$	6 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "	2.75	$\frac{7}{8}$	10 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "	6.80	$\frac{7}{8}$	12 $\frac{1}{2}$ "	7 $\frac{1}{2}$ "	12.00
1	7 "	4 "	3.00	1	10 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "	7.00	1	13 "	7 $\frac{1}{2}$ "	13.50
$\frac{1}{8}$	7 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "	3.25	$\frac{1}{8}$	11 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "	7.50	$\frac{1}{8}$	13 $\frac{1}{2}$ "	7 $\frac{1}{2}$ "	15.20
$\frac{1}{4}$	7 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "	3.50	$\frac{1}{4}$	11 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "	8.00	$\frac{1}{4}$	14 "	7 $\frac{1}{2}$ "	16.75
$\frac{3}{8}$	7 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "	4.15	$\frac{3}{8}$	11 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "	8.50	$\frac{3}{8}$	14 "	7 $\frac{1}{2}$ "	18.50

## ADJUSTABLE REAMER.

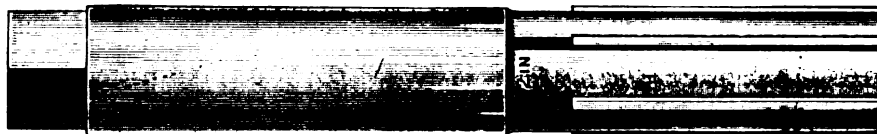


Fig. 1133.

Diameter, Inches.	Full Length.	Price, Each.	Diameter, Inches.	Full Length.	Price, Each.	Diameter, Inches.	Full Length.	Price, Each.	Diameter, Inches.	Full Length.	Price, Each.
$\frac{1}{8}$	6 $\frac{1}{2}$ ins.	\$3.30	$\frac{1}{8}$	9 $\frac{1}{2}$ ins.	\$5.26	$\frac{1}{8}$	12 $\frac{1}{2}$ ins.	\$9.47	$\frac{1}{8}$	14 $\frac{1}{2}$ ins.	\$14.24
$\frac{1}{4}$	6 $\frac{1}{2}$ "	3.30	$\frac{1}{4}$	9 $\frac{1}{2}$ "	5.65	$\frac{1}{4}$	12 $\frac{1}{2}$ "	10.00	$\frac{1}{4}$	14 $\frac{1}{2}$ "	14.77
$\frac{3}{8}$	6 $\frac{1}{2}$ "	3.30	$\frac{3}{8}$	9 $\frac{1}{2}$ "	6.04	$\frac{3}{8}$	12 $\frac{1}{2}$ "	10.53	$\frac{3}{8}$	14 $\frac{1}{2}$ "	15.30
$\frac{1}{2}$	6 $\frac{1}{2}$ "	3.30	$\frac{1}{2}$	11 $\frac{1}{2}$ "	6.43	$\frac{1}{2}$	13 $\frac{1}{2}$ "	11.06	$\frac{1}{2}$	14 $\frac{1}{2}$ "	15.83
$\frac{5}{8}$	8 $\frac{1}{2}$ "	3.43	$\frac{5}{8}$	11 $\frac{1}{2}$ "	6.82	$\frac{5}{8}$	13 $\frac{1}{2}$ "	11.59	$\frac{5}{8}$	14 $\frac{1}{2}$ "	16.36
$\frac{3}{4}$	8 $\frac{1}{2}$ "	3.70	$\frac{3}{4}$	11 $\frac{1}{2}$ "	7.35	$\frac{3}{4}$	13 $\frac{1}{2}$ "	12.12	$\frac{3}{4}$	14 $\frac{1}{2}$ "	16.89
$\frac{7}{8}$	8 $\frac{1}{2}$ "	4.09	$\frac{7}{8}$	11 $\frac{1}{2}$ "	7.88	1	14 $\frac{1}{2}$ "	12.65			
1	8 $\frac{1}{2}$ "	4.48	1	12 $\frac{1}{2}$ "	8.41	1	14 $\frac{1}{2}$ "	13.18			
	9 $\frac{1}{2}$ "	4.87	1 $\frac{1}{8}$	12 $\frac{1}{2}$ "	8.94	1 $\frac{1}{8}$	14 $\frac{1}{2}$ "	13.71			

Adjustable Reamers in sets,  $\frac{1}{2}$  to 2 $\frac{1}{2}$  inches inclusive, by 16ths..... per set, \$294 25

## HARDENED AND GROUND STEEL MANDREL.

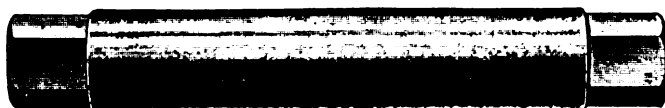


Fig. 1134.

## WILDE'S EXPANDING SLEEVE MANDREL.



Fig. 1135.

### Prices, Hardened and Ground Steel Mandrels, Fig. 1134.

Diameter, Inches.	Length, Inches.	Price, Each.	Diameter, Inches.	Length, Inches.	Price, Each.	Diameter, Inches.	Length, Inches.	Price, Each.	Diameter, Inches.	Length, Inches.	Price, Each.
$\frac{1}{8}$	3 $\frac{1}{2}$	\$0.65	$\frac{1}{8}$	6	\$1.45	$\frac{1}{8}$	9	\$3.10	$\frac{1}{8}$	13	\$8.40
$\frac{1}{4}$	4	.75	$\frac{1}{4}$	6 $\frac{1}{2}$	1.55	$\frac{1}{4}$	9 $\frac{1}{2}$	3.50	$\frac{1}{4}$	13	9.40
$\frac{3}{8}$	4 $\frac{1}{2}$	.85	$\frac{3}{8}$	6 $\frac{1}{2}$	1.70	$\frac{3}{8}$	10	3.90	$\frac{3}{8}$	13	10.50
$\frac{1}{2}$	4 $\frac{1}{2}$	.95	$\frac{1}{2}$	6 $\frac{1}{2}$	1.85	$\frac{1}{2}$	10 $\frac{1}{2}$	4.35	$\frac{1}{2}$	13	11.60
$\frac{5}{8}$	5	1.05	$\frac{5}{8}$	7	2.00	1	11	4.80	1	13	12.80
$\frac{3}{4}$	5 $\frac{1}{2}$	1.15	$\frac{3}{4}$	7 $\frac{1}{2}$	2.20	$\frac{3}{4}$	11 $\frac{1}{2}$	5.60			
$\frac{7}{8}$	5 $\frac{1}{2}$	1.25	$\frac{7}{8}$	8	2.45	$\frac{7}{8}$	12	6.50			
1	5 $\frac{1}{2}$	1.35	1	8 $\frac{1}{2}$	2.75	1	12	7.40			

Mandrels are slightly tapering and are not injured by careful driving.

### Prices, Wilde's Expanding Sleeve Mandrels, Fig. 1135.

Diameter, Inches.	Length of Mandrel.	Length of Sleeve.	Price, Each.	Diameter, Inches.	Length of Mandrel.	Length of Sleeve.	Price, Each.	Diameter, Inches.	Length of Mandrel.	Length of Sleeve.	Price, Each.
$\frac{1}{8}$	5 ins.	1 $\frac{1}{2}$ ins.	\$2.00	$\frac{1}{8}$	6 $\frac{1}{2}$ ins.	2 $\frac{1}{2}$ ins.	\$3.55	$\frac{1}{8}$	11 ins.	3 $\frac{1}{2}$ ins.	\$6.60
$\frac{1}{4}$	5 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "	2.20	$\frac{1}{4}$	7 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	3.75	$\frac{1}{4}$	11 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "	7.15
$\frac{3}{8}$	5 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "	2.45	$\frac{3}{8}$	7 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	4.20	$\frac{3}{8}$	12 "	3 $\frac{1}{2}$ "	7.70
$\frac{1}{2}$	5 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "	2.70	$\frac{1}{2}$	8 "	2 $\frac{1}{2}$ "	4.65	$\frac{1}{2}$	12 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "	8.60
$\frac{5}{8}$	6 "	2 "	2.90	$\frac{5}{8}$	9 "	3 "	5.05	$\frac{5}{8}$	13 "	4 "	9.70
$\frac{3}{4}$	6 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	3.10	$\frac{3}{4}$	10 "	3 $\frac{1}{2}$ "	5.50	$\frac{3}{4}$	13 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "	11.00
$\frac{7}{8}$	6 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	3.30	$\frac{7}{8}$	10 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "	6.00	$\frac{7}{8}$	14 "	4 $\frac{1}{2}$ "	12.30

The Mandrel is turned to fit the tapered hole in the sleeve, which gives a perfect bearing the length of the Mandrel.



# CLAMP DOGS AND CLAMPS.

## STEEL CLAMP DOG.

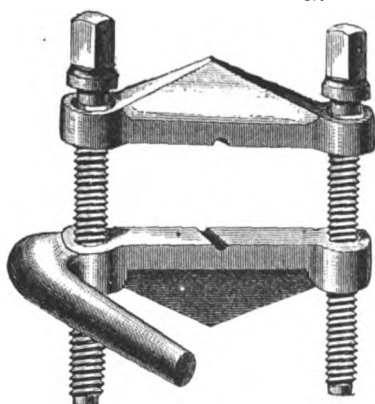


Fig. 1146.

13 $\frac{1}{4}$ inches between screws .....	each, \$1.50
21 $\frac{1}{4}$ " " " .....	" 2.00
23 $\frac{1}{4}$ " " " .....	" 2.50
Set of three .....	Per set, 5.50

## MALLEABLE IRON CLAMP DOG.

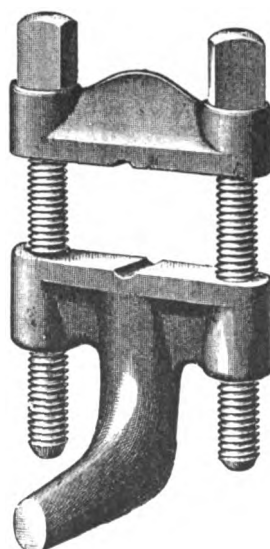


Fig. 1147.

1 inch opening.....	each, \$1.00
1 $\frac{1}{2}$ " " .....	" 1 10
2 " " .....	" 1.30
3 " " .....	" 1.60

## STEEL CLAMP DOG.

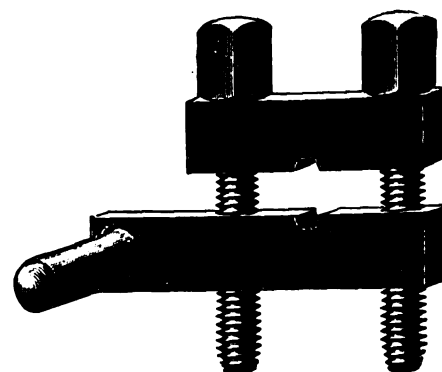


Fig. 1148.

This Clamp is made from steel and will carry all that can be put into it.

1 inch opening.....	each, \$1.25
1 $\frac{1}{2}$ " " .....	" 1.50
2 " " .....	" 1 75
3 " " .....	" 2.00

## LIGHT STEEL MECHANICS' CLAMP.

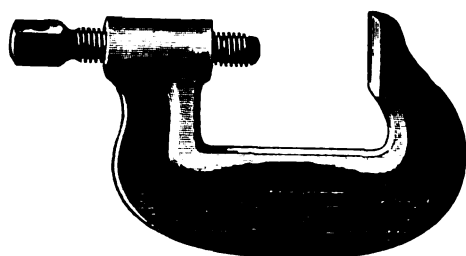


Fig. 1149.

The back is 1 $\frac{1}{2}$  inches from the centre of the screw. As this clamp is not so deep as the Heavy Clamp, Fig. 1150, it is really almost as strong. It has steel screw with hardened point and is suitable for Boiler makers, Blacksmiths, etc.

2 inch opening.....	each, \$1.25
3 " " .....	" 1.50
4 " " .....	" 1.75
5 " " .....	" 2.00
6 " " .....	" 2.25
7 " " .....	" 2.50
8 " " .....	" 2.75
9 " " .....	" 3.00

## HEAVY STEEL VISE CLAMP.

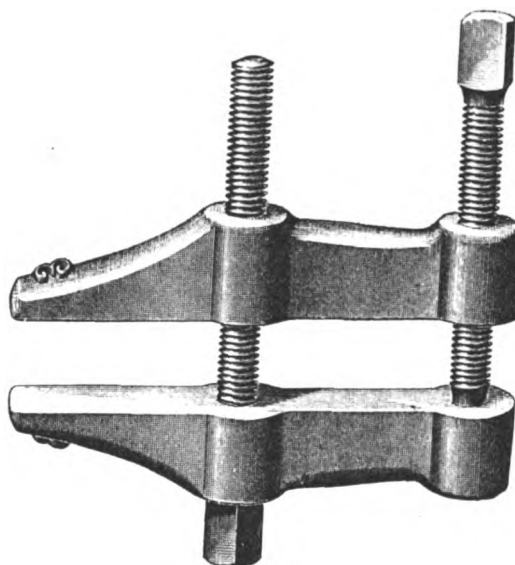


Fig. 1151.

This is a strong, neat and useful tool. It is made from steel castings.

1 $\frac{1}{4}$ inch opening.....	each, \$1.25
2 $\frac{1}{4}$ " " .....	" 1.50
3 $\frac{1}{4}$ " " .....	" 2.00
4 $\frac{1}{4}$ " " .....	" 2.50
5 $\frac{1}{4}$ " " .....	" 3.25
6 $\frac{1}{4}$ " " .....	" 4.00

## MACHINISTS' VISE CLAMPS.

Similar to Fig. 1151, but drop-forged from bar steel and the stock distributed so as to strengthen all parts subject to strain.

1 $\frac{1}{4}$ inch opening.....	each, \$1.50
2 $\frac{1}{4}$ " " .....	" 2.00
3 $\frac{1}{4}$ " " .....	" 2.50
4 $\frac{1}{4}$ " " .....	" 3.00

## HEAVY STEEL MACHINISTS' CLAMP.

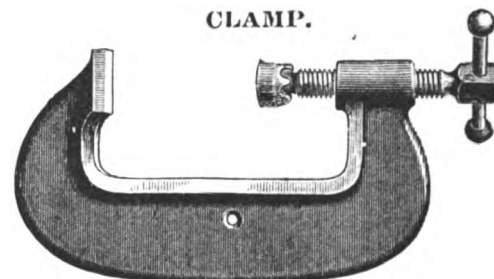


Fig. 1150.

The back is 2 $\frac{1}{2}$  inches from the centre of the screw.

This clamp is extra heavy and has button on end of screw, hung on a ball so as to accommodate itself to irregularities without bending the screw. The foot of the clamp is planed.

2 inch opening .....	each, \$1.75
3 " " .....	" 2.00
4 " " .....	" 2.25
5 " " .....	" 2.50
6 " " .....	" 2.75
8 " " .....	" 3.25
10 " " .....	" 3.75
12 " " .....	" 4.25
14 " " .....	" 5.00
16 " " .....	" 6.00
18 " " .....	" 7.00

## HEAVY STEEL BOILER-MAKERS' CLAMP.

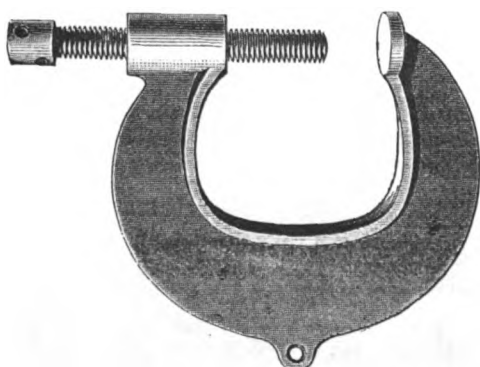


Fig. 1152.

2 $\frac{1}{2}$ inch opening, 2 $\frac{1}{2}$ inches deep....	each, \$2.00
4 inch opening, 4 $\frac{1}{2}$ inches deep.....	" 4.00

## PATENT BOLT DOG.

Attached to Face Plate.

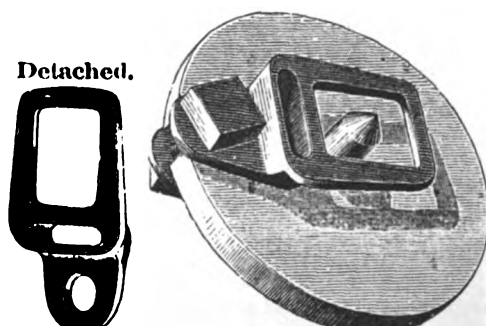


Fig. 1153.

Fig. 1154.

Set of 12 sizes,  $\frac{1}{8}$  to 2 inches inclusive.

Per set..... \$2.50



## LATHE TOOLS AND SLIDE REST.

## STEEL CHUCKING REAMER HOLDER.

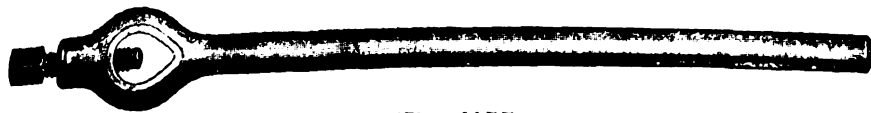


Fig. 1155.

No.	Size of Hole.	Size of Handle.	Length of Handle from Center of Hole.	Price, each.
1	$\frac{1}{8}$ in.	$\frac{1}{8}$ in.	10 inches.	\$0.85
2	$\frac{1}{4}$ in.	$\frac{1}{4}$ in.	12 "	1.00
3	$\frac{3}{8}$ in.	$\frac{3}{8}$ in.	13 1/2 "	1.25
4	$\frac{1}{2}$ in.	$\frac{1}{2}$ in.	15 "	1.50

## STEEL DOG WRENCH.



Fig. 1156.

Forged from bar steel.

Fits screw heads from  $\frac{1}{4}$  to  $\frac{1}{2}$  inch square. Will answer for both Dogs and Tool Post.  
Price, each.....\$0.75

## STEEL CHUCK DRILL HOLDER.



Fig. 1157.

The slot is rounded every way, so as to avoid corners that interfere with centering the drill.

No. 1, taking drills from $\frac{1}{8}$ to $\frac{3}{8}$ inch	\$0.50
" 2, " " $\frac{3}{8}$ to $\frac{1}{2}$ "	.50
" 3, " " $\frac{1}{2}$ to $1\frac{1}{4}$ "	.60
" 4, " " $1\frac{1}{4}$ to $1\frac{1}{2}$ "	.75
" 5, " " $1\frac{1}{2}$ to 2 "	.90

## STANDARD LATHE WRENCH.



Fig. 1158.

Unsize and Rough.

No. 1, $\frac{1}{2}$ and $\frac{3}{4}$ inch	each, \$0.15
" 2, " " $\frac{3}{4}$ " "	.20
" 3, " " $\frac{1}{2}$ " "	.30
" 4, " " $\frac{1}{4}$ " "	.40
" 5, " " $\frac{1}{8}$ " "	.60
" 6, $1\frac{1}{2}$ " $1\frac{1}{4}$ "	.90
" 7, $1\frac{1}{2}$ " $1\frac{1}{2}$ "	1.50

## STEEL LATHE TOOLS.

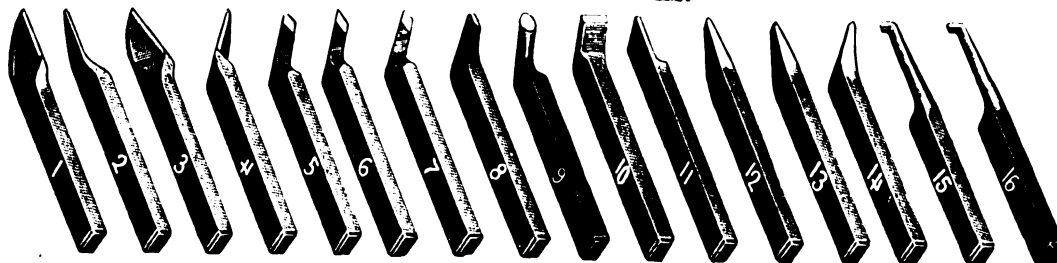


Fig. 1159.

These tools are carefully made from the best tool steel. For convenience in ordering, I have numbered each tool and give below a descriptive list of same.

No. 1. Left Side Tool.	No. 6. Diamond Point, for steel and wrought iron, right hand.	No. 9. Round Nose.	No. 14. Bent Thread Tool.
" 2. Right Side Tool.	" 7. Diamond Point, for steel and wrought iron, left hand.	" 10. Water Finishing Tool.	" 15. Inside Turning Tool.
" 3. Left Side Tool, bent.	" 8. Half Diamond Point.	" 11. Cutting Off Tool.	" 16. Inside Thread Tool.
" 4. Right Side Tool, bent.		" 12. Roughing Tool.	Special tools of any size or design made to order.
" 5. Heavy Dia. Point for Cast Iron.		" 13. Thread Tool.	
Size of steel.....inches.			
Single tool, any number.....			
Sets of 6 tools (1 each Nos. 1, 2, 11, 12, 13, 16).....			
Sets of 10 tools (1 each Nos. 1, 2, 4, 6, 7, 9, 11, 12, 13, 16).....			
Sets of 16 tools (1 each No. as shown above).....			

If Tools are wanted to use on a Planer or Shaper it should be so stated in order.

## BEACH'S PATENT LATHE TOOL.



Fig. 1160.

The cutters for these tools are made from the best steel, carefully tempered, and are exact to United States standard gauge (60°). One of these cutters will do more than six times the work of a forged tool, and when used up can be replaced for 25 cents.

Tools complete, straight or offset holders, with two cutters.

No.	Size of Holder	Thickness of Cutter.	Tools complete, each.	Extra Cutters, each.
2	$\frac{1}{2}$ x $\frac{1}{2}$ x $5\frac{1}{2}$ ins.	$\frac{3}{8}$ in.	\$2.50	\$0.25
3	$1\frac{1}{2}$ x $\frac{1}{2}$ x $5\frac{1}{2}$ "	$\frac{1}{2}$ "	3.00	.35

## SLIDE REST.

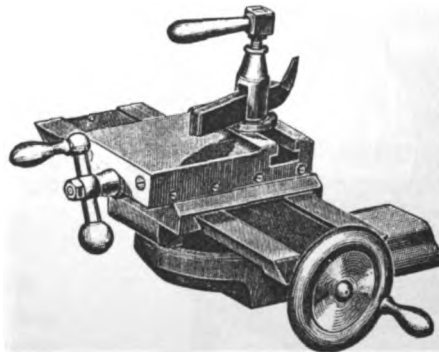


Fig. 1161.

Swing of Lathe.	Each.	Swing of Lathe.	Each.
6 inches.	\$10.00	12 inches.	\$35.00
8 "	12.00	14 "	52.00
10 "	30.00	16 "	55.00

The 6 and 8 inch Rests are for amateur lathes, and have no swivel attachment.

# LATHE TOOLS AND MILLING CUTTERS.

## SLATE'S PATENT CUTTING-OFF TOOLS.

Straight Holder.

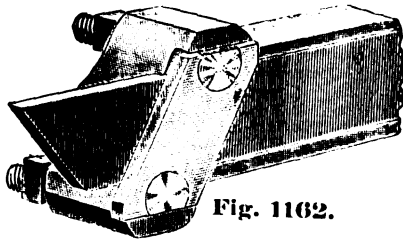


Fig. 1162.

Off-set Holder.

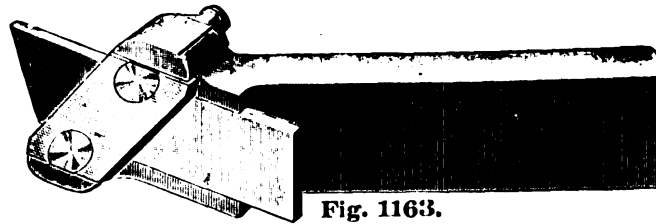


Fig. 1163.

These Tools consist of a holder and movable blade or cutter. The holder is drop-forged from steel and case-hardened. The under edge of holder is extended, giving blade firm support directly under cut. The shank of holder entering tool post is  $1\frac{1}{8} \times 1\frac{1}{2}$  in. The blades are 6 inches long and  $\frac{7}{8}$  inch wide, made from extra quality of steel, which, by recent improved methods of treatment, a far superior blade to any formerly furnished is insured, and the cutting qualities of which are fully guaranteed. Straight Holders with one blade, each \$2.50. Off-set Holders with one blade, each \$2.50. Extra Blades,  $\frac{1}{4}$  inch thick, each, \$0.50;  $\frac{3}{8}$  inch, each, \$0.45;  $\frac{1}{2}$  inch, each, \$0.40;  $\frac{5}{8}$  inch, each, \$0.35;  $\frac{3}{4}$  inch, each, \$0.30;  $\frac{7}{8}$  inch, each, \$0.30; 1 inch, each, \$0.30.

## ELLIOTT'S CUTTING-OFF TOOLS.

For cutting round iron or steel to any length, in any lathe, independently of tool-post or slide rest.

Cutting-off Tool No. 1.

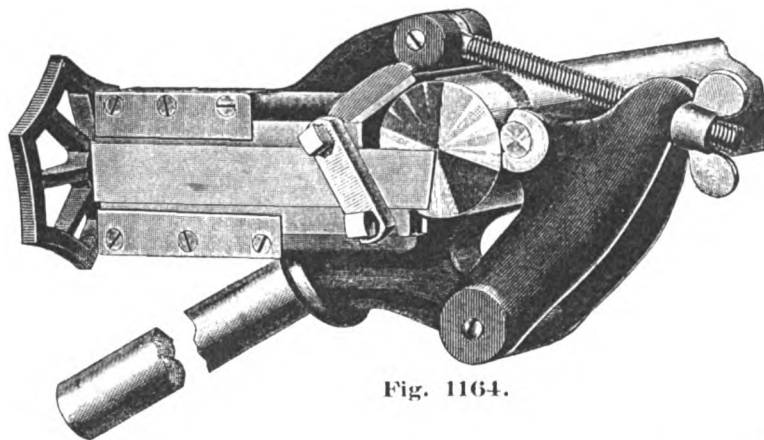


Fig. 1164.

Description, Cutting-off Tool No. 1, Fig. 1164.

This Tool is for cutting off round iron or steel of any size, from  $\frac{3}{8}$  inch to 2 inches in diameter, may be used with any lathe, or even without a lathe, as it can be operated like an ordinary pipe cutter.

The manner of holding the stock to be cut is the same as small Tool, Fig. 1165, but the cutter is fed in by a screw and hand wheel, while the machine is prevented from turning by the handle, which may rest against the lathe bed or any fixed object, or may be held in the hand.

No. 1. Cutting from  $\frac{3}{8}$  to 2 inches..... each, \$8.00

### EXTRA BLADES.

Thickness, Inches.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Price, each.....	\$0.50	.45	.40	.35	.30	.30	.30

Cutting-Off Tool, No. 2.

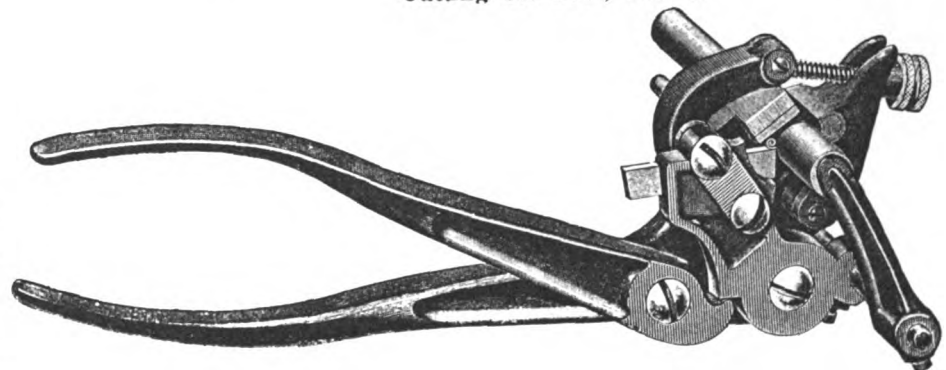


Fig. 1165.

Description, Cutting-Off Tool, No. 2. Fig. 1165.

The main body of No. 2 Tool has a V-shaped opening, lined with steel, into which the stock to be cut is held by an adjustable jaw. To the front side of the body is pivoted a tool holder which is moved toward the work by pressure on the handles. The cutters are ground concave after being tempered, and are sharpened by grinding off the end.

No. 2. Cutting from  $\frac{3}{8}$  to  $\frac{1}{2}$  inch..... each, \$4.00  
Extra Cutters,  $\frac{1}{8}$  inch thick..... " .15

## MILLING CUTTERS.

Straight Teeth.

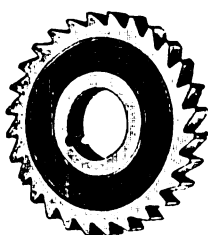


Fig. 1166.

Spiral Teeth.

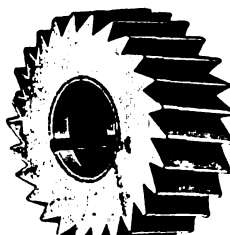


Fig. 1167.

Round Face.

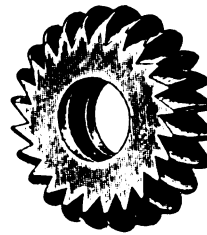


Fig. 1168.

Concave Face.

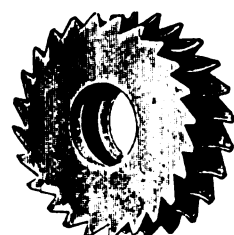


Fig. 1169.

### Prices, Straight and Spiral Teeth.

Width of Face.	Diameter of Cutter.	Size of Hole.	Price Each.	Width of Face.	Diameter of Cutter.	Size of Hole.	Price Each.
$\frac{1}{4}$ in.	2 1/4 in.	1 in.	\$1.30	$\frac{1}{4}$ in.	2 3/4 in.	1 in.	\$2.30
$\frac{3}{8}$ "	2 1/2 "	1 "	1.40	$\frac{3}{8}$ "	2 3/4 "	1 "	2.80
$\frac{1}{2}$ "	2 1/2 "	1 "	1.50	$\frac{1}{2}$ "	2 3/4 "	1 "	3.00
$\frac{3}{4}$ "	2 1/2 "	1 "	1.60	$\frac{3}{4}$ "	2 1/2 "	1 "	3.20
1 "	2 1/2 "	1 "	1.70	1 "	2 1/2 "	1 "	3.40
$1\frac{1}{4}$ "	2 3/4 "	1 "	1.80	$1\frac{1}{4}$ "	2 1/2 "	1 "	3.70
$1\frac{1}{2}$ "	2 3/4 "	1 "	1.90	$1\frac{1}{2}$ "	2 1/2 "	1 "	4.10
$1\frac{3}{4}$ "	2 3/4 "	1 "	2.10	$1\frac{3}{4}$ "	2 1/2 "	1 "	4.50

### Prices, Round and Concave Face.

Ground to a true arc by tools adapted to the purpose.

Width of Face.	Diameter of Cutter.	Size of Hole.	Price Each.	Width of Face.	Diameter of Cutter.	Size of Hole.	Price Each.
$\frac{1}{4}$ in.	2 1/2 in.	1 in.	\$2.50	$\frac{1}{2}$ in.	2 1/2 in.	1 in.	\$3.00
$\frac{3}{8}$ "	2 1/2 "	1 "	2.75	$\frac{3}{4}$ "	2 1/2 "	1 "	3.75

### Angular Mills.

Made right or left hand and to any angle as desired..... each, \$3.00

These Milling Cutters are finished after being hardened. The holes are ground to standard size and the sides of the cutters ground true to the holes.

## DRILL CHUCKS AND ARBORS.

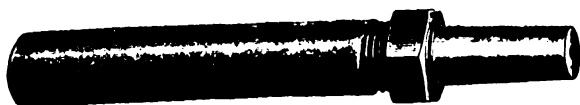
CENTER ARBOR.  
For Beach Drill Chucks.

Fig. 1170.

No. 1.	For Beach Drill Chuck No. 1	.....each, \$1.00
" 2.	" " " 2	" 1.00
" 3.	" " " 3 and 4	" 1.20

Arbor has one blank end to be fitted to lathe spindle.

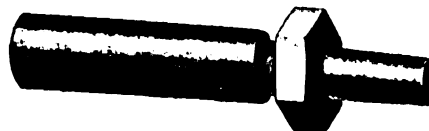
PLUG ARBOR.  
For Drill Chucks.

Fig. 1171.

This Arbor is made to fit all Drill Chucks, also 2 and 2½ inch Lathe Chucks.

Price, each.....\$1.00

## STAR DRILL CHUCK.

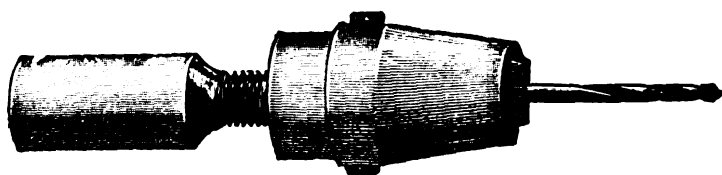


Fig. 1172.

This Chuck is simple in construction, strong and durable. The shanks are centered so they can easily be fitted to any lathe.

No. 1.	Shank ½ in. diameter, 2 ins. long, holds drills ¼ to ½ in.	each, \$1.25
" 2.	" 5/8 " " 3½ " " ¾ to 1 in.	" 2.00

## CENTER DRILL CHUCK.

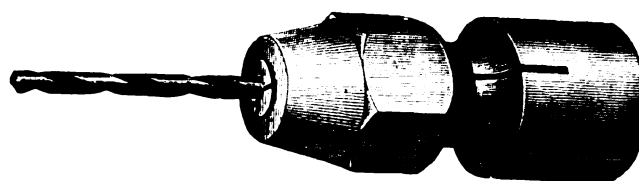


Fig. 1173.

This Chuck is made of steel with much care, has hardened jaws, and will prove a convenient tool. Can be furnished to hold any drill one size only, from ⅛ to ⅝ inch diameter.

Price, each Chuck.....\$2.50

## HARTFORD DRILL CHUCK.

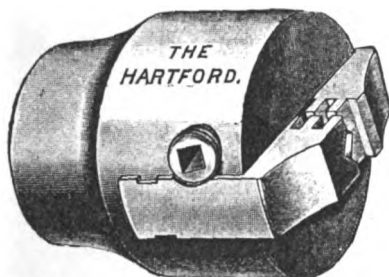


Fig. 1174.

The working parts of this chuck are made of cast steel. The best chuck made for wood boring tools.

No. 0.	Holds Drills, 0 to ¼ inch	.....each, \$6.00
" 1.	" " 0 to ½ inch	" 7.00
" 2.	" " 0 to ¾ inch	" 8.00

## ACME DRILL CHUCK.

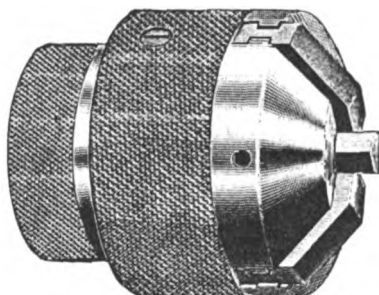


Fig. 1175.

This is the best self-tightening Drill Chuck in the market for its price. Is made of steel and well finished.

No. 20, holds drills, from 0 to ⅝ inch, true and firm.....each, \$4.00

## BEACH PATENT DRILL CHUCK.

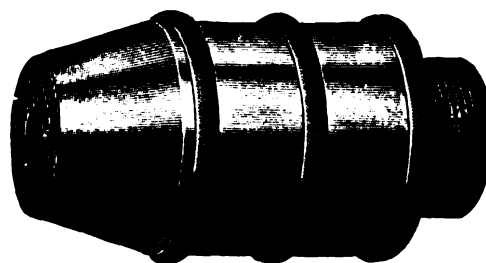


Fig. 1176.

This Chuck is well made and carefully finished.

No. 1.	Holds Drills, 0 to ¼ inch	.....each, \$8.00
" 2.	" " 0 to ½ " "	" 8.50
" 3.	" " ½ to ¾ " "	" 10.00
" 4.	" " ¾ to 1 " "	" 11.00

## PEERLESS DRILL CHUCK.

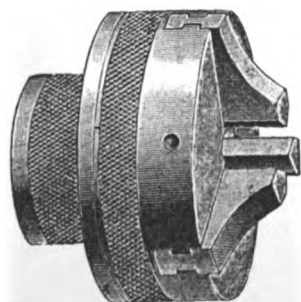


Fig. 1177.

This Chuck is about the same as the Acme, Fig. 1175, but is in a more compact form, being a little shorter and a little lighter. It is strong, well made and durable.

No. 30, Holds Drills from 0 to ½ inch.  
Each.....\$4.00

## GIANT DRILL CHUCK.

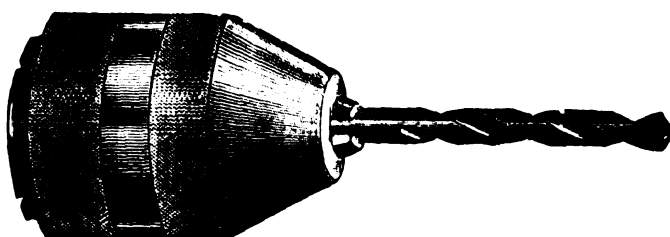


Fig. 1178.

The Giant Drill Chuck is made to gauge and of the best steel forgings; all parts are interchangeable. It is so simple in construction that any one can take it apart and put it together again quickly and without any liability of getting it wrong.

It is quickly adjusted and holds a drill firmly without mutilating it.

No. 1.	Holds Drills from 0 to ¾ inch	.....each, \$5.50
" 2.	" " 0 to 1 " "	" 6.00
" 3.	" " 1 to 1½ " "	" 10.00

## BOSS DRILL CHUCK.

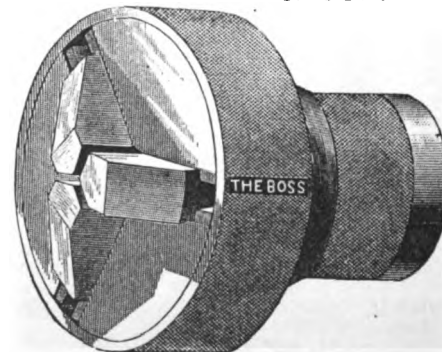
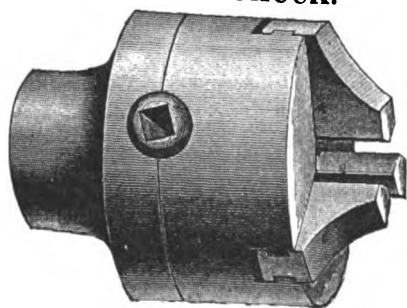


Fig. 1179.

This Chuck is designed for fine and accurate drilling. It is made entirely of steel and carefully finished.

No. 40, Holds Drills from 0 to ½ inch.  
Each.....\$6.00

## KEY DRILL CHUCK.



**Fig. 1180.**

No. 1, holds drills from 0 to  $\frac{1}{2}$  inch . . . each, \$6.50  
 " 2, " "  $\frac{1}{4}$  to  $\frac{1}{2}$  " . . . " 8.00

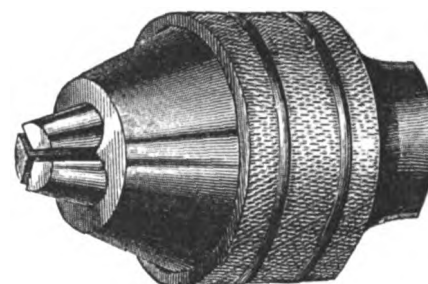
**JEWELERS'  
DRILL CHUCK.**



**Fig. 1181.**

**Full size.**

### ALMOND DRILL CHUCK.

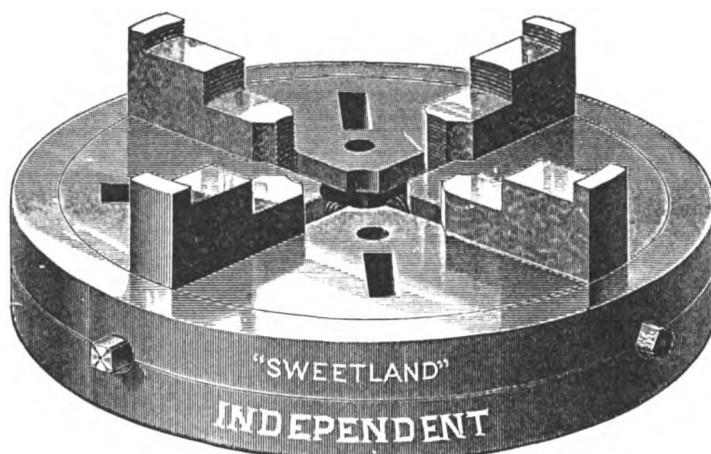


**Fig. 1182.**

No. 1,	holds drills from 0 to $\frac{3}{16}$ inch...	each,	\$5.00
" 2,	" " 0 to $\frac{1}{8}$ " ... "		5.00
" 3,	" " 0 to $\frac{1}{4}$ " ... "		8.50

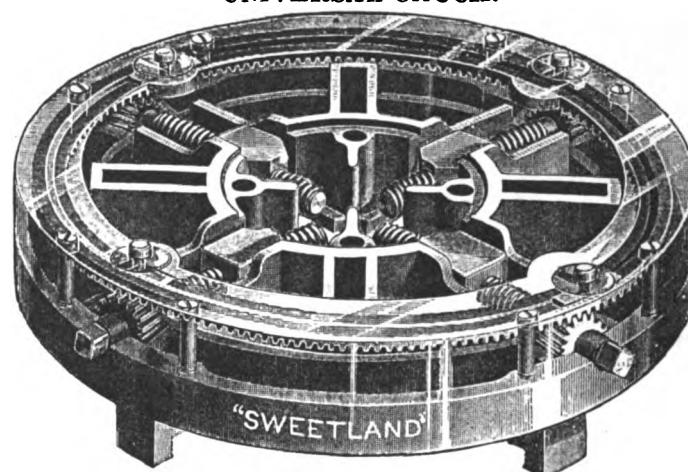
### Independent, Combination and Universal.

**INDEPENDENT CHUCK.**



**Fig. 1183.**

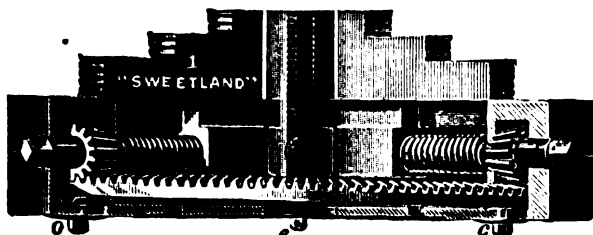
**UNIVERSAL CHUCK.**



**Fig. 1184.**

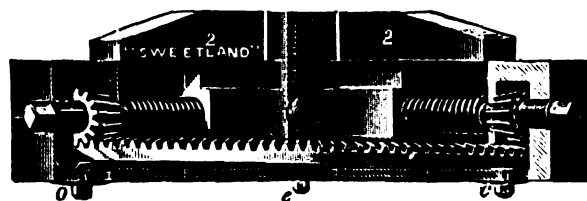
Fig. 1184 represents the entire mechanism of the Sweetland Chuck. The design of the improvement is to make the chuck independent as well as universal, thus combining two chucks in one. In the recess underneath the rack are the cam blocks, beveled to correspond with the bevel recess in the rack. The cam blocks are held in place by the convex spring washers, which allow them to be moved to or from the centre without disturbing the nuts, the friction being sufficient to hold them in place. When moved to the outer portion of the rack they connect the gearing, making the chuck universal; and when moved inward they disconnect the gearing, thus making each screw independent. The advantage of making each screw independent without disconnecting the others from the gearing, is a feature not combined in any other chuck, and is an improvement fully appreciated by the mechanic when adjusting the jaws for eccentric, concentric or universal work. For instance, the chuck having been used independent, the workman wishes to change to universal, the jaws are moved inward until the outer end is true with the line on face of chuck; now, each screw can be engaged with the rack separately by sliding the cam block inward. If one jaw is found to be out of true, it can be disconnected and reset, leaving the others in mesh undisturbed. This chuck has a large hole in centre, and will allow a drill or reamer to pass through the work without injury to face of Chuck. These Chucks will be furnished without the combination when so ordered and when thus supplied will be universal only.

### REVERSE JAW CHUCK.



**Fig. 1185.**

## INSIDE JAW CHUCK.



**Fig. 1186.**

### Prices, Sweetland Chucks.

INDEPENDENT CHUCKS.				COMBINATION AND UNIVERSAL CHUCKS.							
FOUR JAWS.				THREE JAWS.				FOUR JAWS.			
Diameter.	Each.	Diameter.	Each.	Diameter.	Each.	Diameter.	Each.	Diameter.	Each.	Diameter.	Each.
6 inches.	\$18 00	21 inches.	\$55.00	6 inches.	\$26.00	21 inches.	\$80.00	6 inches.	\$32.00	21 inches.	\$95.00
9 "	24.00	24 "	65.00	9 "	34.00	24 "	100.00	9 "	42.00	24 "	120.00
12 "	30.00	30 "	120.00	12 "	44.00	30 "	170.00	12 "	56.00	30 "	200.00
15 "	35.00	36 "	150.00	15 "	52.00	36 "	220.00	15 "	64.00	Prices are for either	
18 "	44.00			18 "	62.00	Car wheels	250.00	18 "	75.00	style jaws.	

## NATIONAL LATHE CHUCKS.

COMBINATION CHUCK.

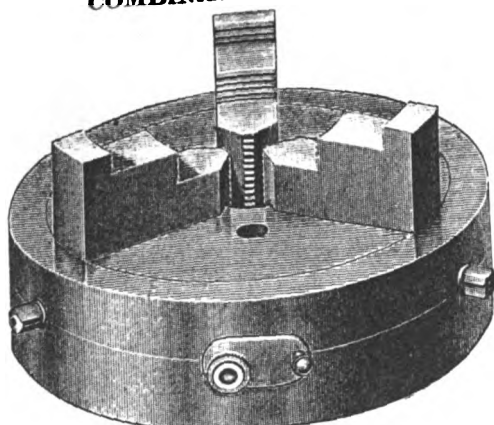


Fig. 1187.

Combination and Universal.

The bodies of the National Chucks are made of the best grade of cast iron; the jaws are of Norway iron, thoroughly case hardened, accurately fitted and ground perfectly true; the pinions are made of steel of the best quality, are carefully fitted throughout, and are hardened in their wearing parts.

BACK VIEW OF CHUCK.

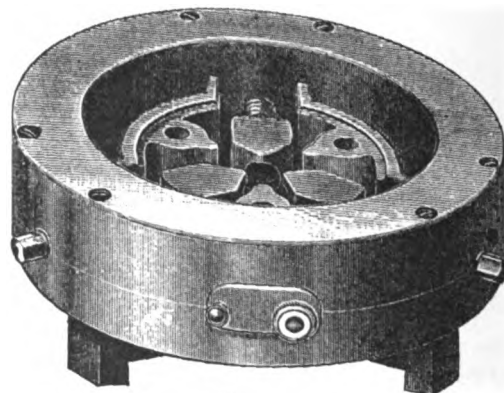


Fig. 1188.

UNIVERSAL CHUCK.

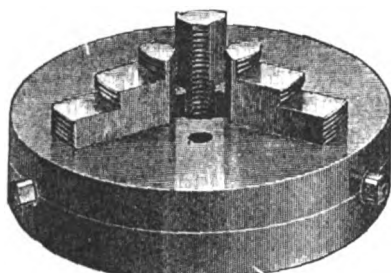
REVERSE JAW  
UNIVERSAL CHUCK.

Fig. 1189.

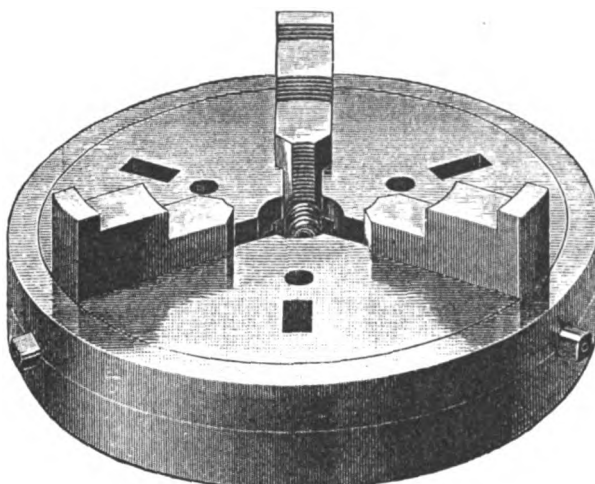


Fig. 1190.

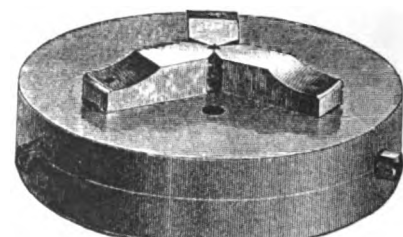
INSIDE JAW  
UNIVERSAL CHUCK.

Fig. 1191.

## Description of Chucks.

The parts used in the construction of the National Combination Chuck are the front and back sections of the shell, the jaws, the circular rack and pinion screws common to the Universal Chuck, and a loose ring having bevel plates attached lying under the rack. Recesses are made in the back section of the shell into which the bevel plates on the loose ring may fall when the rack is thrown out of gear with the pinion screws. When the rack is thus thrown out of gear each jaw moves independently; when it is in gear the movement is universal.

A stud attached to the loose ring extends through an elongated slot in the shell of the chuck, and by this the ring is moved to and fro, thus instantly throwing the rack in or out of gear with the pinion screws. The plate which lies on the periphery of the chuck is made to swing on the stud, and above the plate is a thumb nut, which, when turned down, holds the ring by means of the plate—and a stop-lug which is attached to the plate and rests in the slot—firmly in position. In either position of the plate the slot is entirely covered, and the ingress of chips and dirt to the gear is prevented. It will be seen that the mechanism of the National Combination Chuck is very simple, and that the change from universal to independent and the reverse can be made instantly and effectively.

To make the change from independent to universal action, move each jaw toward the center until their back ends are true with the fine lines on the face of the chuck, unscrew the thumb nut as far as it will turn and loosen the plate, then by placing your thumb on the nut and the wrench on one side of the pinion screws the slightest motion will suffice to throw the rack into gear with the pinions. Reverse the plate, let the stop-lug drop into place and turn the thumb nut down to place. The chuck will then be universal, perfectly true and ready for work.

The manner of change from universal to independent needs no description.

## Prices, Combination or Universal Chucks.

WITH EITHER COMMON OR REVERSIBLE JAWS.

THREE JAWS.				FOUR JAWS.			
Diameter.	Each.	Diameter.	Each.	Diameter.	Each.	Diameter.	Each.
4 inches.....	\$22.00	24 inches.....	\$100.00	6 inches.....	\$32.00	30 inches.....	\$200.00
6 ".....	26.00	30 ".....	170.00	9 ".....	42.00	36 ".....	285.00
8 ".....	34.00	36 ".....	230.00	12 ".....	56.00	42 ".....	325.00
10 ".....	44.00	42 ".....	270.00	15 ".....	64.00		
12 ".....	52.00	30 " for car wheels..	185.00	18 ".....	75.00		
15 ".....	62.00	36 ".....	250.00	21 ".....	95.00		
18 ".....	80.00	42 ".....	300.00	24 ".....	120.00		

These prices are for chucks with either style of jaws as shown above.

## Prices, Extra Parts of Chucks.

CHUCK JAWS.				For Car Wheels.			
4 inch Jaws.....	each, \$2.50	15 inch Jaws.....	each, \$5.75	30 inch Jaws.....	each, \$18.50	30 inch Jaws.....	each, \$18.50
6 ".....	3.00	18 ".....	6.50	36 ".....	26.00	36 ".....	29.00
8 ".....	3.75	21 ".....	8.50	42 ".....	33.00	42 ".....	33.00
12 ".....	4.25	24 ".....	10.75				

RACKS.				PINIONS.				WRENCHES.			
4 inches each, \$1.75	21 inches each, \$7.00	4 inches each, \$0.55	21 inches each, \$1.90	4 inches each, \$0.80	21 inches each, \$2.10						
6 "..... 2.00	24 "..... 9.00	6 "..... .65	24 "..... 2.50	6 "..... .90	24 "..... 2.30						
8 "..... 2.75	30 "..... 14.00	8 "..... .90	30 "..... 3.75	8 "..... 1.00	30 "..... 2.90						
10 "..... 3.25	36 "..... 18.00	10 "..... 1.10	36 "..... 5.00	10 "..... 1.20	36 "..... 3.60						
12 "..... 4.00	42 "..... 24.00	12 "..... 1.30	42 "..... 6.50	12 "..... 1.50	42 "..... 4.50						
15 "..... 5.75		15 "..... 1.50		15 "..... 1.80							
18 ".....				18 ".....							



## NATIONAL LATHE CHUCKS.

Independent and Combination.

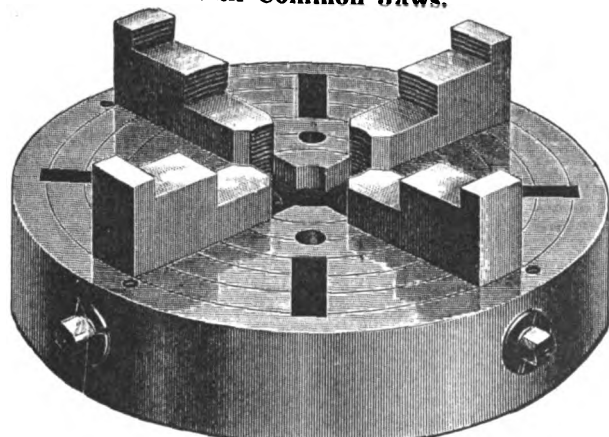
INDEPENDENT FOUR JAWED CHUCK.  
With Common Jaws.

Fig. 1192.

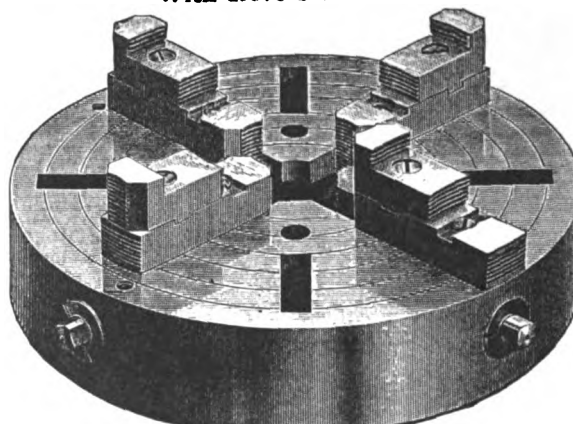
INDEPENDENT FOUR JAWED CHUCK.  
With Reversible Jaws.

Fig. 1193.

REVERSE JAW.

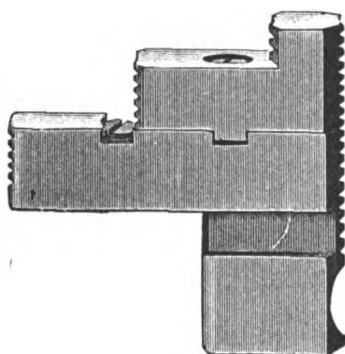


Fig. 1194.

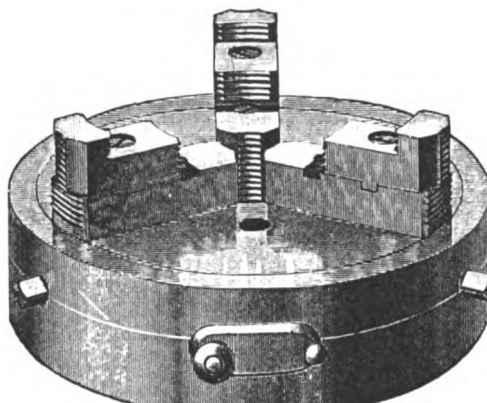
COMBINATION CHUCK.  
With Reversible Jaws.

Fig. 1195.

COMMON JAW.

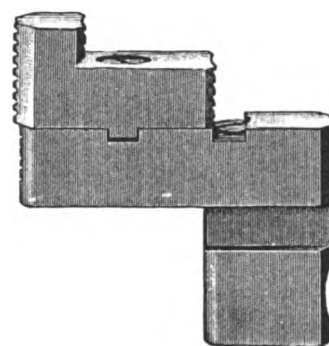


Fig. 1196.

INSIDE JAW.

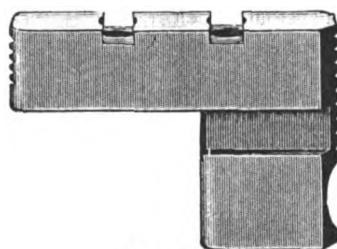


Fig. 1197.

Fig. 1195 represents the National Combination Chuck, supplied with the new Reversible Jaw. By this improvement all of the three jaws in common use may be made, and the change can be easily and rapidly effected.

Fig. 1194 shows the Reverse Jaw.

Fig. 1196 shows the Common Jaw.

Fig. 1197 shows the Inside Jaw.

When changes are made in the Reversible Jaws, care should be taken to remove all chips and dirt from the mortise and tenon and faces of the parts, and to have the screws turned firmly to place.

A chuck supplied with Reversible Jaws is adapted to every variety of work.

## Description of Reversible Jaws.

These are the only genuine reversible jaws made, and five different forms of jaws may be made from one set of National Reversible Jaws.

These jaws having a solid nut (which is preferable to the old style with half nut) are reversed without moving the jaw from its place.

The main section of the jaw is provided on top with two mortises running transversely across the same, in which the tenon on the under side of the removable section fits. The removable section is provided over and through the tenon, with a screw-hole, while the main section is provided with screw-holes passing centrally through the mortises and adapted to register with the screw-hole in the removable section. By this means the removable section can be secured in the most desirable position on the main section to suit the convenience of the operator and the shape of the article being worked. By this improvement all the advantages given by any reversible jaws are obtained, while the main part of the jaw remains solidly in its place and the changes are made with ease and rapidity.

## Prices, Independent Four Jawed Chucks.

WITH COMMON JAWS, FIG. 1192.

Diameter.	Each.	Diameter.	Each.
6 inches.....	\$18.00	21 inches.....	\$55.00
9 ".....	23.00	24 ".....	65.00
12 ".....	30.00	30 ".....	120.00
15 ".....	35.00	36 ".....	150.00
18 ".....	44.00	42 ".....	250.00

## Prices, Independent Four Jawed Chucks.

WITH REVERSIBLE JAWS, FIG. 1193.

Same price as Combination Chucks, see page 142.

## Prices, Combination Chucks.

WITH REVERSIBLE JAWS, FIG. 1195.

Same prices as Combination Chucks, see page 142.

## Prices, Extra Parts of Chucks.

Same prices as parts of Combination Chucks, see page 142.

## CUSHMAN'S LATHE CHUCKS.

## INDEPENDENT FOUR-JAW CHUCK, WITH REVERSIBLE JAWS.

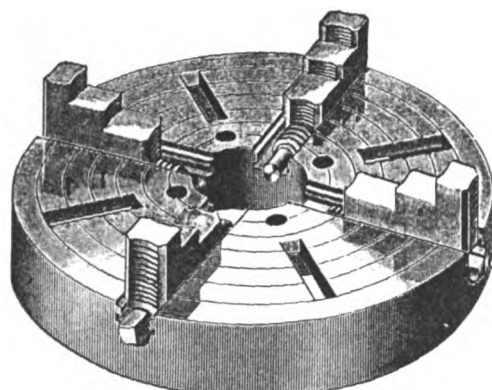
Sectional View.  
Showing Jaws and Screws.

Fig. 1198.

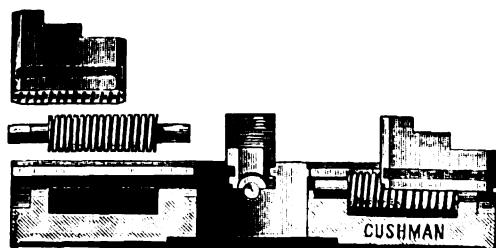


Fig. 1199.

Back View.

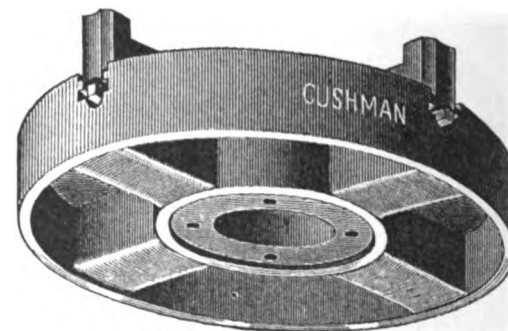


Fig. 1200.

The casting for this chuck is made heavy but well proportioned. The screws are made of steel, and have long bearings at each end, and in case of the square end being worn, it can be reversed and the other fitted to the key. The jaws are made of the best quality of wrought iron, thoroughly case hardened, and can be run out and reversed.

Diameter.	Each.
4 1/2 inches.....	\$14.00
6 ".....	18.00
8 ".....	22.00
9 ".....	24.00

Diameter.	Each.
10 inches.....	\$26.00
12 ".....	30.00
14 ".....	34.00
15 ".....	35.00

Diameter.	Each.
16 inches.....	\$38.00
18 ".....	44.00
20 ".....	50.00
21 ".....	55.00

Diameter.	Each.
22 inches.....	\$57.00
24 ".....	65.00
26 ".....	75.00

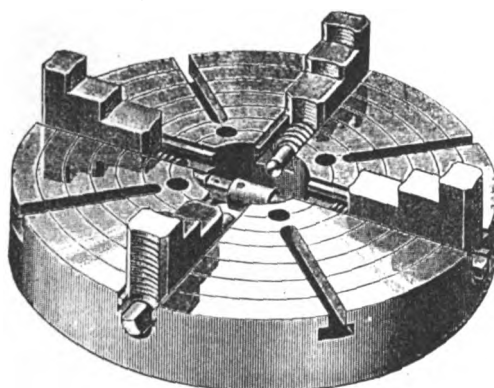
IMPROVED  
FOUR-JAW CHUCK.

Fig. 1201.

RIGHT AND LEFT HAND SCREW  
FOR IMPROVED CHUCK.

Fig. 1202.

Description,

Figs. 1201 and 1202.

In this chuck two of the jaws are connected with a right and left hand screw, as shown in Fig. 1202, making them universal.

By removing the sleeve in the center, the four jaws become independent. The T slots in the face are milled, and the whole chuck first class in every particular.

Diameter.	Each.
6 inches.....	\$20.00
8 ".....	24.00
9 ".....	26.00
10 ".....	28.00
12 ".....	33.00
14 ".....	37.00
15 ".....	39.00

Diameter.	Each.
16 inches.....	\$42.00
18 ".....	48.00
20 ".....	54.00
21 ".....	59.00
22 ".....	62.00
24 ".....	70.00
26 ".....	80.00

This chuck is thoroughly made, with steel jaws in the smaller sizes and wrought iron thoroughly case hardened in the larger ones.

Diameter.	Each.
3 inches.....	\$8.00
4 ".....	10.00
6 ".....	15.00
9 ".....	20.00

Diameter.	Each.
12 inches.....	\$26.00
15 ".....	32.00
18 ".....	38.00
21 ".....	48.00

Fig. 1203.

## AMATEURS' GEARED CHUCK.

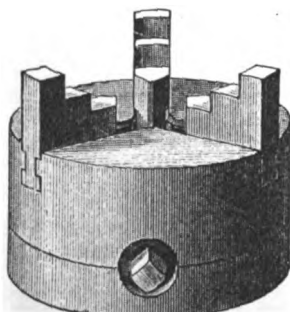


Fig. 1204.

This Chuck is especially adapted to foot lathes and for small work. Can be fitted to any lathe or drill machine, either with a taper plug or a face plate.

The shell is of malleable iron, the working parts of steel and the chucks are made in the most thorough manner.

2 inches diameter.....	each, \$6.00
With 2 sets of jaws.....	" 7.50

## HARTFORD LEVER CHUCKS.

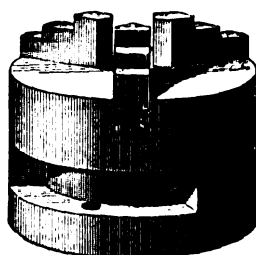


Fig. 1205.

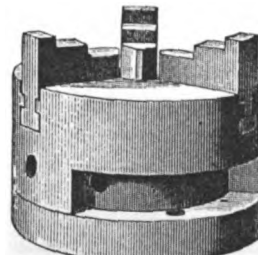


Fig. 1206.

These Chucks are well made, of the best material and are suitable for all kinds of machinists' work, amateurs' lathes and for drill chucks. All sizes are made to fit a taper arbor; the 3 and 4 inch can be fastened to a face plate, and any of them can be bored and threaded to screw on spindle of lathe.

Diameter.	With 1 Set of Jaws.	With 2 Sets of Jaws.
2 inches.....	\$4.00	\$5.50
3 ".....	5.00	6.50
4 ".....	6.00	7.50

## AMATEURS' LEVER CHUCK.

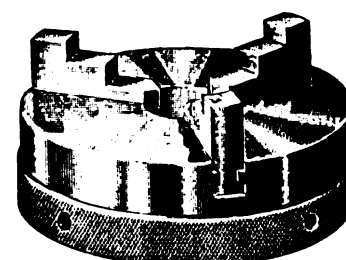


Fig. 1207.

This Chuck is made especially for light work. It can be attached to lathe by face plate or screwed to spindle.

Diameter.	With 1 Set of Jaws.	With 2 Sets of Jaws.
2 inches.....	\$4.50	\$5.75
3 ".....	5.50	6.75
4 ".....	6.50	8.00
5 ".....	7.50	9.00

# CUSHMAN'S LATHE CHUCKS. GEARED SCROLL CHUCKS.

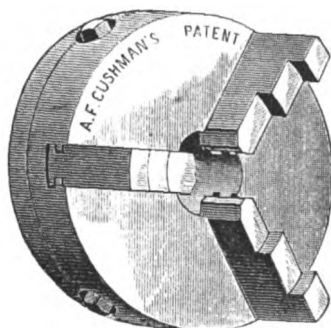


Fig. 1208.

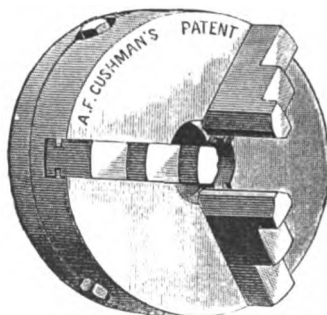


Fig. 1209.

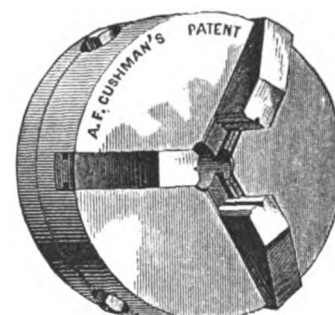


Fig. 1210.

All of these Chucks are now made having three pinions, a great advantage over the old style, as a Chuck so made will outwear any other. It not only makes a handier Chuck to use by having a pinion always within reach, but the Chuck is thus perfectly balanced, an advantage when required for high speed machines. All pinions and scrolls are of steel. All jaws up to and including five inch are of steel. The other sizes have jaws of the best wrought iron, thoroughly case hardened.

Diameter.	Each.	Diameter.	Each.	Diameter.	Each.	Diameter.	Each.
2 1/2 inches.	\$8.00	4 inches.	\$12.00	6 inches.	\$18.00	9 inches.	\$24.00
3 "	10.00	5 "	15.00	7 1/2 "	20.00	12 "	30.00

For chucks with two sets of jaws add 20 per cent. to above lists, and for four-jawed chucks add 10 per cent.

## With Slip Jaws.

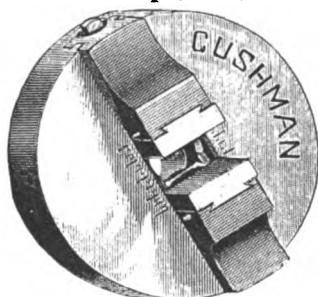


Fig. 1211.

This Chuck is made with either connected or independent jaws. The capacity of chuck is greater than any two-jaw chuck made. It is made to bolt to face-plate.

Diameter.	Each.	Diameter.	Each.
4 1/2 inches.	\$16.00	7 inches.	\$24.00
6 "	20.00	9 "	30.00

## EXTRA SLIP JAWS.

For Chuck.....inches,	4 1/2	6	7	9
Iron.....per pair,	\$1.00	1.00	1.25	1.25
Steel.....	2.00	2.00	2.00	2.50

## IMPROVED TWO-JAW CHUCKS.

### With Slip Jaws, Square Body.

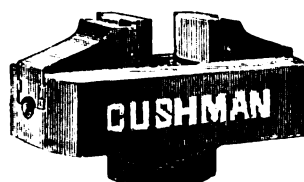


Fig. 1212.

This Chuck is made with either independent or connected jaws. It is very strong and well made; it is threaded to fit spindle.

Length.	Each.	Length.	Each.
7 inches.	\$24.00	12 inches.	\$36.00
9 "	30.00	15 "	42.00

## EXTRA SLIP JAWS.

For Chuck....inches,	7	9	12	15
Iron.....per pair,	\$1.00	1.25	1.25	1.50
Steel.....	2.00	2.50	2.50	3.00

## With Solid Jaws.

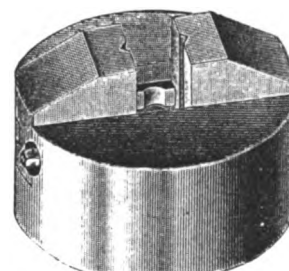


Fig. 1213.

The jaws of this Chuck are grooved in the center for holding drills, square head reamers and taps, and for use on screw machines, bolt cutters, etc. It is furnished with either connected or independent jaws. It is made to bolt to a face-plate, and has hole entirely through the chuck.

Diameter.	Each.	Diameter.	Each.
4 1/2 inches.	\$12.00	6 inches.	\$18.00

If desired, the jaws can be left blank, or can be furnished shaped to hold any special piece.

## COMBINATION THREE-JAW CHUCKS.

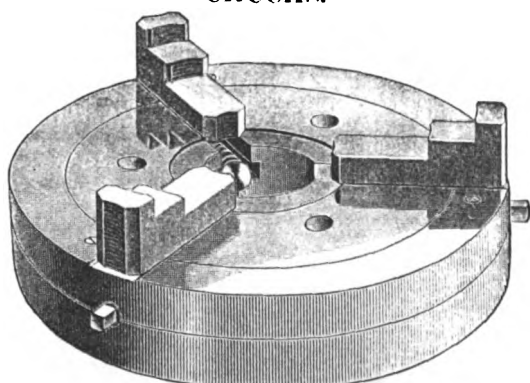


Fig. 1214.

THREE JAWS.			
Diam.	Each.	Diam.	Each.
4 ins.	\$26.00	12 ins.	\$44.00
6 "	26.00	15 "	52.00
9 "	34.00	18 "	62.00
FOUR JAWS.			
Diam.	Each.	Diam.	Each.
6 ins.	\$32.00	12 ins.	\$56.00
9 "	42.00	15 "	64.00
24 inches diameter.....	each,	21 ins.	\$75.00
		21 "	96.00
			each, \$120.00

## COMBINATION CHUCK.

### Sectional View.

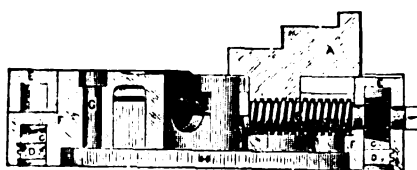


Fig. 1215.

### Description, Figs. 1214 and 1215.

These Chucks are very strong and durable in all parts; they hold the work firmly, and can be very readily fitted to any lathe or machine. The hole through the center is extra large, which is very desirable. The jaws of nine inches and larger can be reversed without removing any other parts of the chuck. They can be used as Independent, Universal or Eccentric Chucks.

All the working parts are entirely protected from dirt and chips, and can be removed for oiling and cleaning without removing the body of the chuck from face-plate or spindle of lathe.

## FACE-PLATE JAWS.

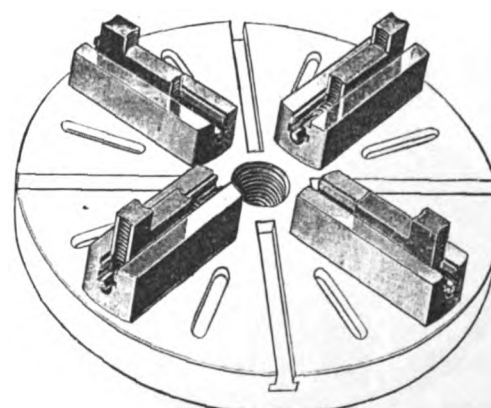


Fig. 1216.

These Jaws are made to fasten to face-plate, and are suitable for 28 to 36 inch swing lathes. Jaws are reversible. Screws are squared at each end, and are also reversible. Jaws and screws are made of forged steel.

Length of body of jaw, 10 inches.  
Price each, complete..... \$20.00

## HORTON LATHE CHUCKS. THREE-JAW UNIVERSAL CHUCK.

Front Plate and Screws.

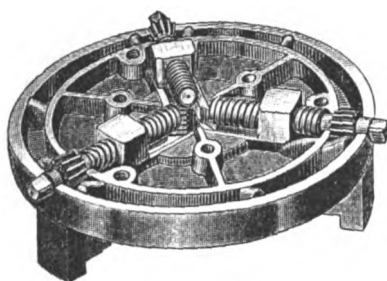


Fig. 1217.

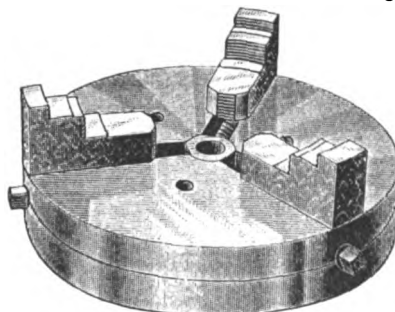


Fig. 1218.

Back Plate and Gear.

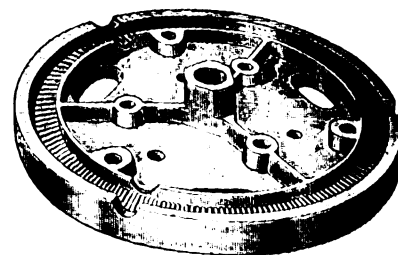


Fig. 1219.

In the Universal Lathe Chuck the jaws are moved to and from the center simultaneously by means of the geared steel screws and the circular rack of steel, which is enclosed in the deep groove or recess in the back plate, the center faces of both front and back plates making a perfectly tight casing for the gearing, so that no dirt, chips, etc., can possibly get into them to clog and injure the chuck. When the rack is taken out, especially from the four-jaw, it makes a superior independent jaw chuck. The jaws are made solid, forged of one piece of metal of the best quality wrought iron or steel, and thoroughly case-hardened; the geared screws and circular rack are of steel made especially for the purpose.

These Chucks are fitted with the Horton Improved Jaw, see Fig. 1230, page 147.

### REVERSE JAW CHUCK.

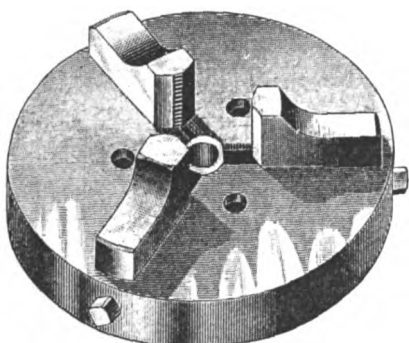


Fig. 1220.

This Chuck is used for holding screws, rods, twist drills, etc. It is also a very superior chuck for hand tool work and brass finishers.

### INSIDE JAW CHUCK.

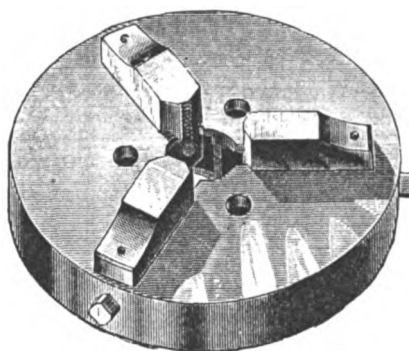


Fig. 1221.

This Chuck is used on milling machines and screw machines, also for holding pipe, rods, drills, dies, etc.

### FOUR-JAW CHUCK.

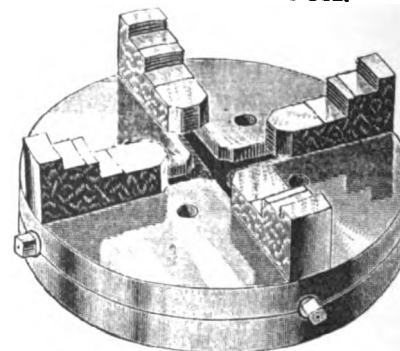


Fig. 1222.

This Chuck is universal, and is fitted with improved jaw. It is made independent, when so ordered, at less price than universal.

### Prices, Universal Chucks, Figs. 1217 to 1222.

#### THREE-JAWED CHUCKS.

##### EITHER STYLE JAWS AS SHOWN ABOVE.

Diameter.	Each.	Diameter.	Each.
4 inches.....	\$22.00	21 inches.....	\$80.00
5 ".....	25.00	22 ".....	90.00
6 ".....	26.00	24 ".....	100.00
9 ".....	34.00	26 ".....	130.00
12 ".....	44.00	30 ".....	170.00
15 ".....	52.00	36 ".....	230.00
18 ".....	62.00	42 ".....	270.00

#### FOUR-JAWED CHUCKS.

##### EITHER STYLE JAWS AS SHOWN ABOVE.

Diameter.	Each.	Diameter.	Each.
5 inches.....	\$30.00	22 inches.....	\$110.00
6 ".....	32.00	24 ".....	120.00
9 ".....	42.00	26 ".....	160.00
12 ".....	56.00	30 ".....	200.00
15 ".....	64.00	36 ".....	285.00
18 ".....	75.00	42 ".....	325.00
21 ".....	95.00		

### CAR WHEEL CHUCK.

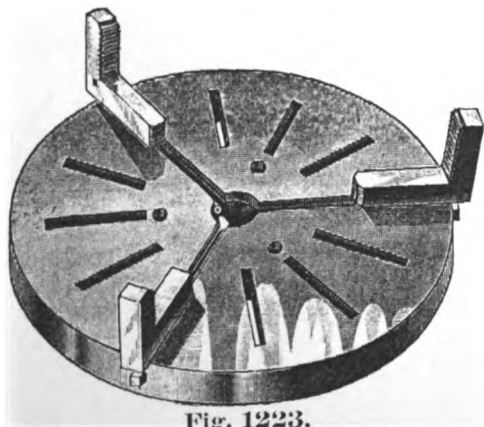


Fig. 1223.

This Chuck is universal, and can be attached to a boring machine table or lathe. The jaws are faced with steel, and made long to fit both tread and flange of car wheels, thus truing them both ways.

Diameter.	Each.
30 inches.....	\$185.00
36 ".....	250.00
42 ".....	300.00

### IMPROVED CAR WHEEL CHUCK.

#### Sectional View.

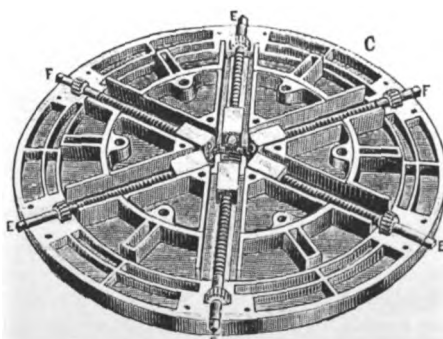


Fig. 1224.

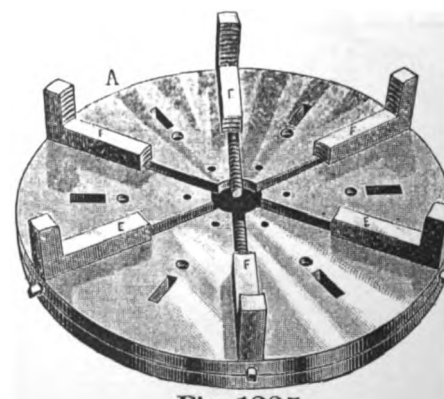


Fig. 1225.

This Chuck has six jaws arranged on the universal principle, in sets of three each, each set being operated by a separate gear, pinion and driving screw. The jaws E E E in Fig. 1225 are operated by the correspondingly lettered screws in Fig. 1224. Similarly, the jaws F F F in Fig. 1225 are operated by the screws F F F in Fig. 1224, both sets of jaws coming to a common center. By this arrangement the gripping strength of two separate chucks is combined in one.

Body of chuck is made of specially strong cast iron, the jaws are forged solid of best wrought iron and well case-hardened, and the screws, racks and pinions are of steel.

Diameter, 42 inches. Inner end of jaw will hold work from 25 down to 3 inches.....each, \$400.00



# HORTON LATHE CHUCKS.

**THREE-JAWED CHUCK.**  
With Open Centre.

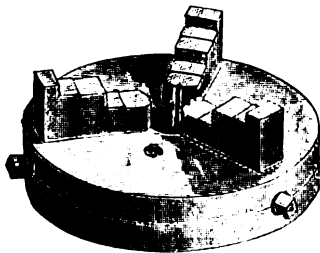


Fig. 1226.

The above cut shows a six inch Chuck, with Patent Jaw made longer and heavier to hold work 7 inches in diameter, with a hole  $1\frac{1}{4}$  inches in diameter in the center of the body to admit of work being passed through the chuck. The bite of jaw extends in to the center of chuck below the carrying screw, thus giving a long bearing to the bite. Made all sizes. Prices same as Fig. 1218.

**TWO-JAWED CHUCK.**  
With Solid Jaws.

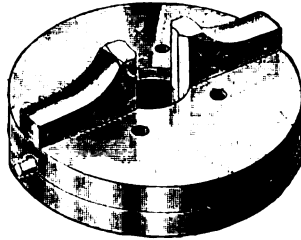


Fig. 1227.

The above cut represents the Two-Jawed Chuck, with a solid, pointed jaw. The bite of the jaw is outside of chuck which carries the work away from it so that it can be readily worked at. It has opening in center  $1\frac{1}{4}$  inches diameter.

Diameter.	Each.	Diameter.	Each.
5 inches	\$21.00	12 inches	\$40.00
6 " "	22.00	15 " "	48.00
9 " "	30.00	18 " "	56.00

**TWO-JAWED CHUCK.**  
With False Jaws.

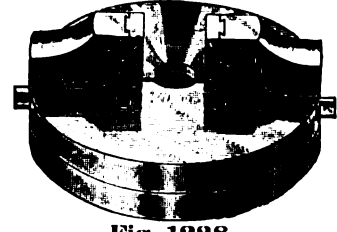


Fig. 1228.

This Chuck has false jaws dove-tailed into bite. It is made either Universal or Independent. The material for its construction is the best that can be procured.

Diameter.	Each.	Diameter.	Each.
5 inches	\$23.00	12 inches	\$42.00
6 " "	24.00	15 " "	50.00
9 " "	32.00		
Extra Jaws for chuck, 5 6 9 12 15			
Per Pair.....\$1.75 2.00 3.00 3.50 4.00			

**THREE-JAW CHUCK.**  
With Outside Bites.

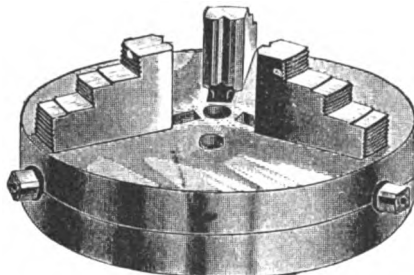


Fig. 1229.

**IMPROVED CHUCK JAW.**

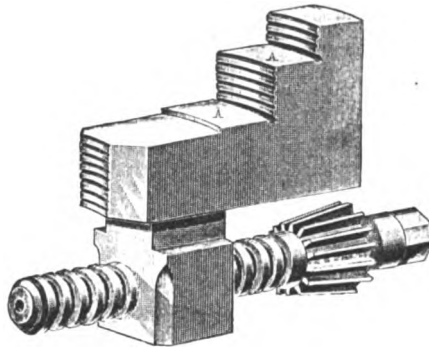


Fig. 1230.

## CHUCKS WITH OUTSIDE BITES.

Same sizes and prices as Common Chuck, Fig. 1218.

## DESCRIPTION IMPROVED CHUCK JAW.

Fig. 1230.

To make the jaws perfectly true on both face and bite, a raised seat A A, is introduced on the face of the jaw, the corner between face and bite being recessed, thus enabling the raised seat, A A, and the bite of the jaw, to be ground perfectly true, after case-hardening, so that work coming to a sharp corner will rest on the ground seat and bite only, thus assuming a perfectly true position.

**THREE-JAW CHUCK.**  
For Cutting-off Lathe.

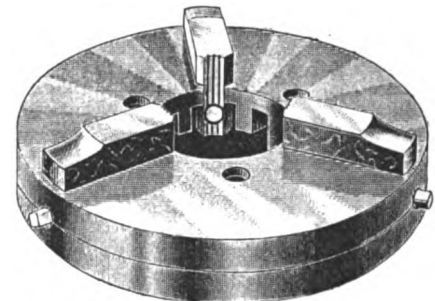


Fig. 1231.

## THREE-JAW CUTTING OFF CHUCKS.

Diameter.	Hole in Center.	Each.	Diameter.	Hole in Center.	Each.
7 inches	$1\frac{1}{2}$ inches	\$26.00	14 inches	$4\frac{5}{8}$ inches	\$52.00
8 " "	2 " "	30.00	17 " "	$5\frac{1}{8}$ " "	62.00
9 " "	$2\frac{1}{8}$ " "	34.00	20 " "	$6\frac{1}{2}$ " "	80.00
12 " "	$3\frac{1}{4}$ " "	44.00	24 " "	$8\frac{1}{2}$ " "	100.00

## FOUR-JAW CUTTING OFF CHUCKS.

Diameter.	Hole in Center.	Each.	Diameter.	Hole in Center.	Each.
7 inches	$1\frac{1}{2}$ inches	\$32.00	12 inches	$3\frac{1}{8}$ inches	\$50.00
8 " "	2 " "	38.00	14 " "	$4\frac{5}{8}$ " "	64.00
9 " "	$2\frac{1}{8}$ " "	42.00			

Can furnish other sizes to order if wanted.

**Four-Jawed Chuck.**

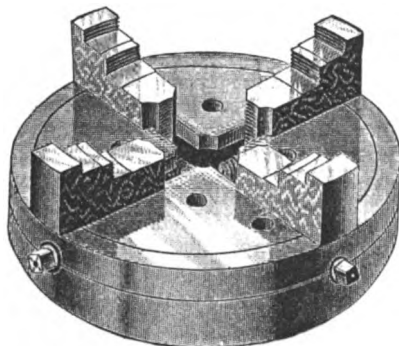


Fig. 1232.

**COMBINATION LATHE CHUCK.**  
Sectional View.

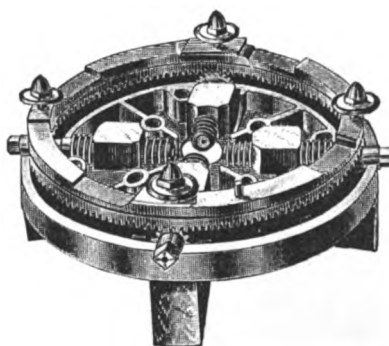


Fig. 1233.

**Back View.**

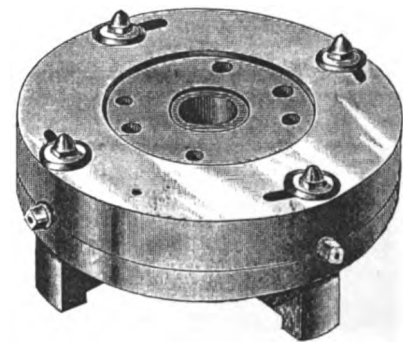


Fig. 1234.

Fig. 1233 is a view of Chuck with the back part of the body removed, showing the working parts which, when the back and front of the chuck are bolted together, are encased perfectly tight so that no dirt, chips, etc., can possibly get into them to clog and injure the chuck. When it is to be used as an Independent Chuck, the pinions and annular gear are unmeshed by moving the steel shoe which is attached to the thumb-nut through the slot in shell (see Fig. 1234) by means of a guide post, into the pocket in the loose ring upon which the annular gear rests; this movement allows the gear to drop away from the teeth in the pinions, and the chuck becomes independent or eccentric, as wanted. To return it to a universal concentric, simply set the outer end of the jaws, which are ground true, exactly on the circular line around the face of the chuck, and slide the shoe up the inclined plane out of the pockets in the loose ring, by means of the thumb-nuts.

## THREE-JAWED CHUCKS.

Diam.	Each.	Diam.	Each.	Diam.	Each.	Diam.	Each.
4 ins.	\$22.00	12 ins.	\$14.00	22 ins.	\$90.00	36 ins.	\$230.00
5 " "	25.00	15 " "	52.00	24 " "	100.00	42 " "	270.00
6 " "	26.00	18 " "	62.00	26 " "	130.00		
9 " "	34.00	21 " "	80.00	30 " "	170.00		

## FOUR-JAWED CHUCKS.

Diam.	Each.	Diam.	Each.	Diam.	Each.
5 ins.	\$30.00	15 ins.	\$64.00	24 ins.	\$120.00
6 " "	32.00	18 " "	75.00	26 " "	160.00
9 " "	42.00	21 " "	95.00	30 " "	200.00
12 " "	56.00	22 " "	110.00	36 " "	285.00

This chuck made with two jaws if so desired.



## SKINNER'S COMBINATION LATHE CHUCKS.

COMMON JAW CHUCK.

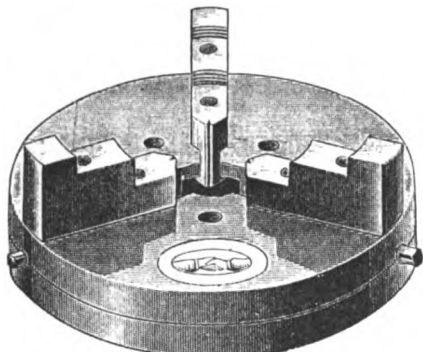


Fig. 1235.

INSIDE JAW CHUCK.

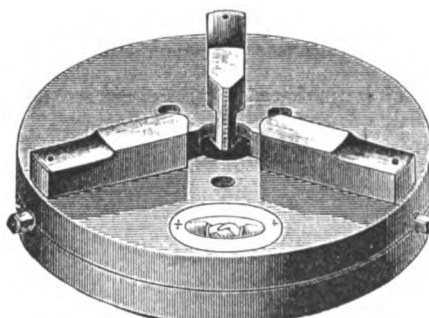


Fig. 1236.

REVERSE JAW CHUCK.

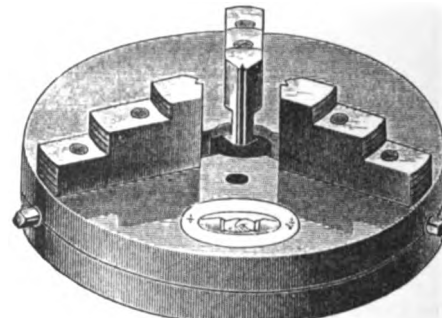


Fig. 1237.

These Chucks are strong, accurate, durable and simple. To change from independent to universal, set all the jaws true on the line on face of chuck, then slide the stud on the back of the chuck to the extreme end of slot and fasten it there by screwing down the nut. If the jaws do not come to center true it is because they were not all set alike before throwing the rack into gear. To change from universal to independent, unscrew the nut and slide the stud to the extreme end of slot and fasten it by means of the nut.

## THREE-JAW CHUCKS.

Diameter.	Each.	Diameter.	Each.
3 inches.....	\$18.00	18 inches.....	\$62.00
4 ".....	22.00	21 ".....	80.00
6 ".....	26.00	24 ".....	100.00
9 ".....	34.00	30 ".....	170.00
12 ".....	44.00	36 ".....	230.00
15 ".....	52.00		

## FOUR-JAW CHUCKS.

Diameter.	Each.	Diameter.	Each.
4 inches.....	\$26.00	21 inches.....	\$95.00
6 ".....	32.00	24 ".....	120.00
9 ".....	42.00	30 ".....	200.00
12 ".....	56.00		
15 ".....	64.00		
18 ".....	75.00		

## TWO-JAW CHUCKS.

Diameter.	Each.	Diameter.	Each.
4 inches.....	\$20.00	21 inches.....	\$74.00
6 ".....	22.00	24 ".....	92.00
9 ".....	30.00		
12 ".....	40.00		
15 ".....	48.00		
18 ".....	56.00		

All parts of the Skinner Chucks are made interchangeable.

## STEPHEN'S PLANER CHUCKS.

FLAT BASE CHUCK.

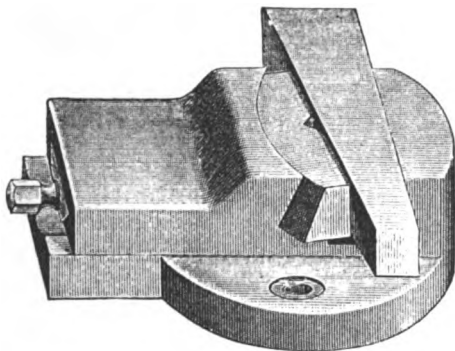


Fig. 1238.

Width of Jaw.	Depth of Jaw.	Jaw Opens.	Each.
6 inches.	1 1/4 inches.	6 inches.	\$25.00
8 ".....	1 1/2 ".....	8 ".....	32.00
10 ".....	2 ".....	10 ".....	40.00
12 ".....	2 1/2 ".....	12 ".....	50.00
15 ".....	2 1/2 ".....	13 ".....	65.00
20 ".....	3 ".....	16 ".....	100.00

## Description.

These Chucks have self-adjusting taper attachment, and the range of opening is exceptionally great. The movable jaw does not lift, being held rigidly by V guides, with provisions for taking up wear. The taper attachment adjusts itself automatically to the work, whether straight, round, taper, level or irregular.

A single screw closes the jaw quickly, and clamps the work firmly. The screw and all wearing parts are protected from chips and dirt. The base is ample, insuring stability. The swivel base is accurately graduated, admitting of a prompt adjustment to any horizontal angle.

All are made to gauge, with parts interchangeable.

SWIVEL BASE CHUCK.

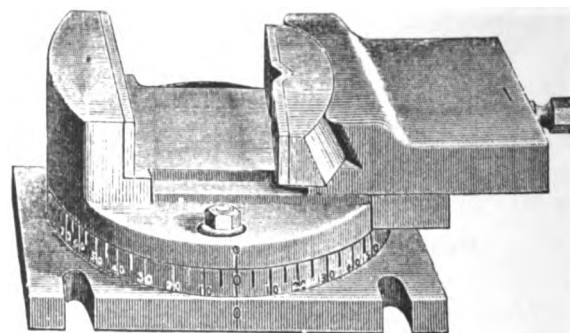


Fig. 1239.

Width of Jaw.	Depth of Jaw.	Jaw Opens.	Each.
6 inches.	1 1/4 inches.	6 inches.	\$35.00
8 ".....	1 1/2 ".....	8 ".....	45.00
10 ".....	2 ".....	10 ".....	55.00
12 ".....	2 1/2 ".....	12 ".....	65.00
15 ".....	2 1/2 ".....	13 ".....	80.00
20 ".....	3 ".....	16 ".....	125.00

## THOMAS' PLANER CHUCKS.

FLAT BASE CHUCK.

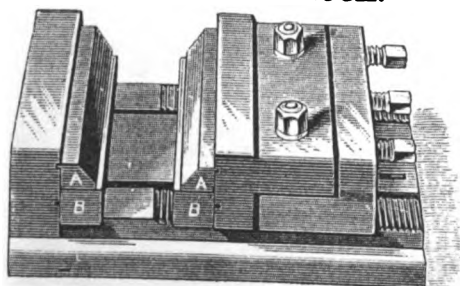


Fig. 1240.

FLAT BASE CHUCK.

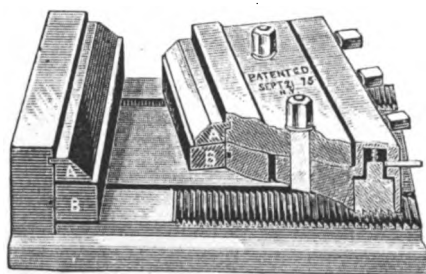


Fig. 1241.

SWIVEL BASE CHUCK.

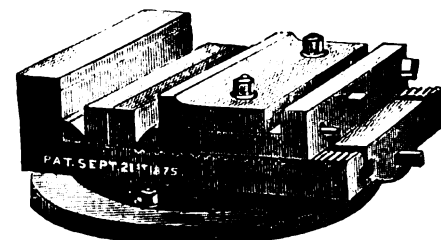


Fig. 1242.

With this Chuck the work is laid between the gibs A A on the base, or on the parallel pieces B B, as may be most convenient, and then fastened; by tightening the set screws first (one of which is generally sufficient), and then the bolts, which, by the peculiar construction of the gibs A A, draws the work down without any hammering and holds it. By this arrangement all springing or twisting of the work is avoided, and it is planed straight and parallel.

This Chuck is also adapted to holding taper work, such as gibs, keys, etc., which it holds with the same certainty and facility as ordinary work. Fig. 1241 shows Chuck in position for taper work, and also the arrangement of the pawls. The Chuck is especially adapted for holding very thin work, as the gibs A A have thin edges to grip work.

## Prices, Flat Base Chucks.

Width of Jaw.	Each.	Width of Jaw.	Each.
8 inches.	\$30.00	15 inches.	\$54.00
10 ".....	36.00	18 ".....	70.00
12 ".....	44.00		

## Prices, Swivel Base Chucks.

Length of Jaw.	Each.	Length of Jaw.	Each.
8 inches.	\$40.00	15 inches.	\$70.00
10 ".....	48.00	18 ".....	90.00
12 ".....	58.00		

## PLANER CHUCKS AND CENTERING MACHINES.

### UNIVERSAL PLANER CHUCK.

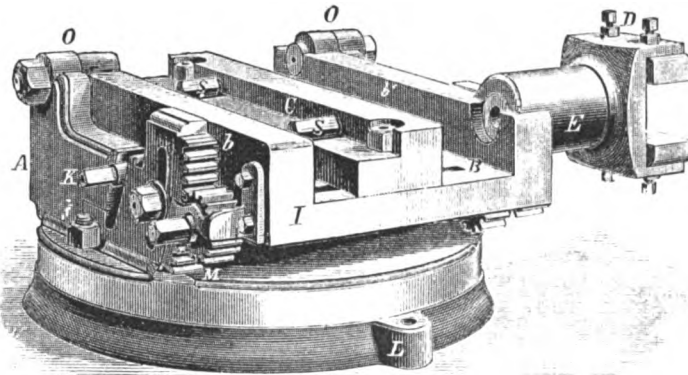


Fig. 1243.

This Chuck will hold concave, convex, tapered and straight surfaces on any planer with cross-feed. It is complete in itself, compact, easily handled, always ready and can be changed from one kind of work to the other without loss of time. It is also a perfect swivel chuck, revolving completely upon its base, thus presenting either end of the work to the tool at will. The degrees being indicated on its face, it can be readily set for any horizontal angle.

Chucks complete.....each, \$275.00

### UNIVERSAL VISE CHUCK.

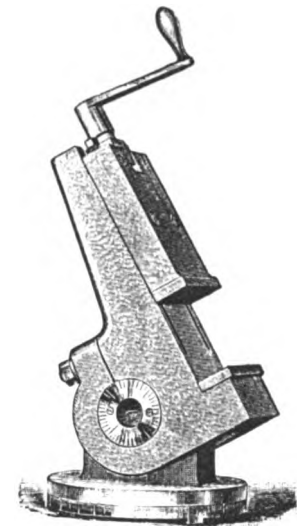


Fig. 1244.

### Description, Universal Vise Chuck, Fig. 1244.

This Chuck is for use on milling machines, planers, shapers, drill presses, etc. It is adapted to swing from a horizontal to a vertical plane or any angle therein. A graduated plate, with a central stud fills the hole in the base of the vise, enabling it to be set at any angle. It can be held in any position on the trunnion by clamping the body of the vise with the two nuts shown in cut. A graduated dial on the trunnion marked by degrees gives the angle to which the vise can be thrown, facilitating the milling or planing of pieces at an angle. The jaws are of hardened steel, and are 2 inches in depth.

6 inch jaw.....each, \$40.00      7 inch jaw.....each, \$65.00      8 inch jaw.....each, \$75.00

### MILLING MACHINE VISE.

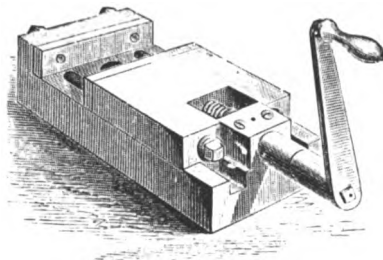


Fig. 1245.

For use upon milling or planing machines. The jaws are made of steel, and left soft unless otherwise ordered.

Size Nos.	Depth of Jaw.	Width of Jaw.	Jaws Open.	Weight.	Each.
1	$\frac{1}{2}$ in.	$3\frac{5}{8}$ ins.	$1\frac{1}{2}$ ins.	10 lbs.	\$15.00
2	$1\frac{1}{4}$ "	$5\frac{1}{8}$ "	$2\frac{3}{4}$ "	24 "	16.00
3	$1\frac{3}{4}$ "	$6\frac{1}{8}$ "	$3\frac{3}{8}$ "	43 "	18.00
4	$1\frac{1}{2}$ "	$7\frac{1}{8}$ "	$4\frac{1}{2}$ "	100 "	34.00

Special sizes of other dimensions than given above made to order at special prices.

### PLANER CENTER.

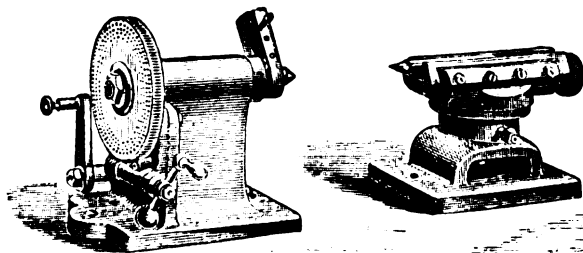


Fig. 1246.

This attachment is made in two sizes, one receiving work of 4 inches diameter and the other of 12 inches. The dials are revolved by worm and gear, the worm pivoted so as to be instantly thrown out of gear. The 12 inch heads are for bolting directly to the planer table. The foot stock center has a horizontal movement by means of a feeding screw, and may be elevated or lowered for tapering work. The 4 inch heads may be set so as to leave an extreme distance of  $14\frac{1}{2}$  inches between centers, and its foot stock may be secured to the bed at any point by a binding screw.

For Planers, 4 inch swing.....each, \$40.00  
" 12 " "....." 75.00

### SHAPER CENTER.

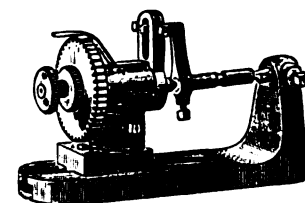


Fig. 1247.

These Centers are to be used with Shapers, Fig. 1251, when wanted.

They are very useful in fluting reamers, taps, etc.

They are made of the best material, and screws are steel.

Face-plate has slot and set screw for receiving and securing tails of carrying dogs.

Shaper Centers.....each, \$12.00

### CENTERING CHUCK.

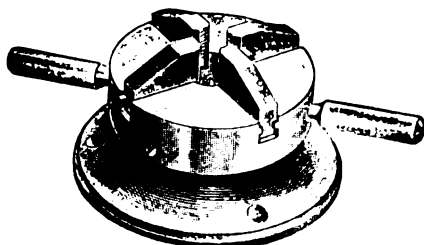


Fig. 1248.

This is a Scroll Chuck with a steel center. It is made to fasten on a bench, and will perfectly center stock from  $\frac{1}{4}$  inch up to  $1\frac{1}{2}$  inches. It is always ready for use, and is very strong, the base and center being of steel.

Made with three jaws for round and hexagon stock, and with four jaws for round, square and octagon stock.

3 Jaw Chucks.....each, \$11.00  
4 Jaw Chucks....." 12.00

### CENTERING MACHINE.

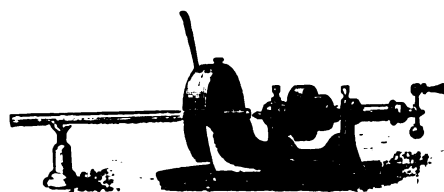


Fig. 1249.

This machine will center and drill any size of round iron, from  $\frac{1}{4}$  to 3 inches in diameter.

Machines with four jaws, for holding square iron, are made to order.

Complete, including Split Drill Chuck, Twist Drill and Rest.....\$50.00  
With Four-Jaw Chuck.....54.00  
Mounted on Iron Table.....75.00  
Countershaft, with tight and loose pulleys, 6 inches diameter by 2 inches face..extra, 9.00

### CENTERING MACHINE.

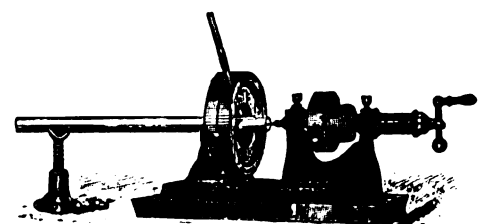


Fig. 1250.

This machine will center and drill iron from  $\frac{1}{4}$  inch to  $4\frac{1}{2}$  inches in diameter.

Machines with four jaws, for holding square iron, made to order.

Complete, including Split Drill Chuck, Twist Drill and Rest.....\$68.00  
With Four-Jaw chuck.....72.00  
Mounted on Iron Table.....93.00  
Countershaft, same as Fig. 1249.....extra, 9.00  
Heavier machines made to order if desired,

SHAPING MACHINE.

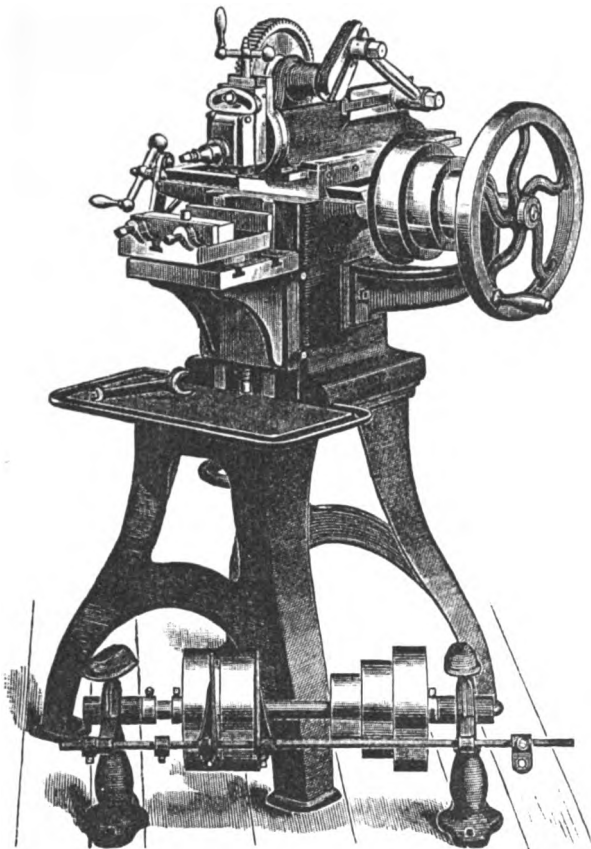


Fig. 1251.

Length of Stroke.	Length of Traverse.	Vertical Adj. of Table.	Weight of Machine.	Price, Complete.
6 ins.	6 ins.	5 ins.	350 lbs.	\$135.00
8 "	8 "	7 "	600 "	200.00
10 "	8 1/2 "	7 "	800 "	250.00
6 inch machine without cones or countershaft.....				120.00
6 " " " without stand, for bench.....				110.00

Description, Shaping Machine, Fig. 1251.

This machine is capable of doing accurate work and is easily adjusted. The driving shaft and feed screws are made of the best steel. The sliding parts are well fitted by scraping. The screws and other parts where necessary, are case-hardened. The feed is automatic and reversible. The cutter bar has a graduated swivel head. The table of 8 and 10 inch machine is supplied with an elevating screw, the 6 inch elevates by hand. A swivel chuck is furnished with each machine.

This is a desirable tool for Model Makers, Die Sinkers, Railroad, Repair and other Shops where machine work is done, and will give good satisfaction on any work within its range.

MILLING MACHINE.

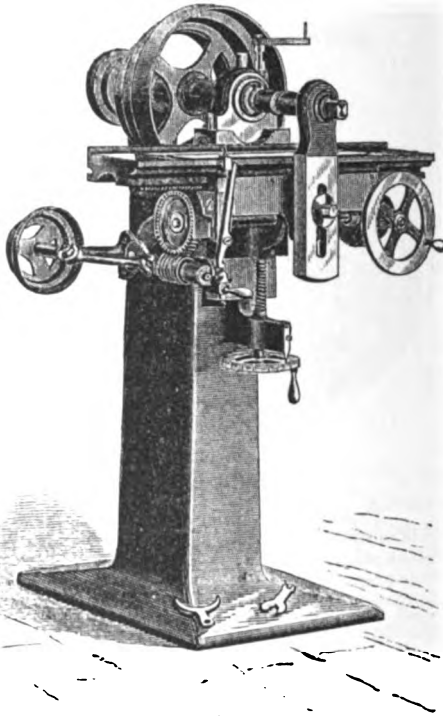


Fig. 1252.

Description Milling Machine, Fig. 1252.

This machine has new and original features, making it the most rigid machine of the kind, of equal capacity, weight and price made. The boxes are made of best phosphor bronze, and provided with take-up for wear. The spindle is made of steel. Greatest distance from center arbor to top of table 6 1/2 inches. Table has vertical adjustment of 4 inches graduated to a scale of 1000 of an inch; horizontal adjustment and automatic feed 15 inches, which can be made longer if machine is desired for splining shafting or similar work, and is so ordered. Weight of machine, 550 lbs.

Price, complete with countershaft.....\$250.00

IMPROVED IRON PLANER.

Description, Improved Iron Planer, Fig. 1253.

This machine is made from entirely new designs, extra heavy and well proportioned. Bed is very deep, uprights have sufficient metal and width of bore to resist heavy cuts. Table is wide, all slots planed, pin hole drilled and screwed and is driven by two belts (one on each side of Planer), through a powerful train of cut gears and rack. Driving gears are inclosed in the bed (thus protected from chips), and mounted on three shafts of large diameter with very long journals, cross head of sufficient length to allow saddle being carried out so that an angle of 45 degrees can be planed on pieces full width of Planer.

The improved belt shifter transfers each belt separately, and arranged so that table can be run back to examine work without shifting a dog. Feeding device gives automatic feed in all directions; sliding surfaces are scraped to surface plates.

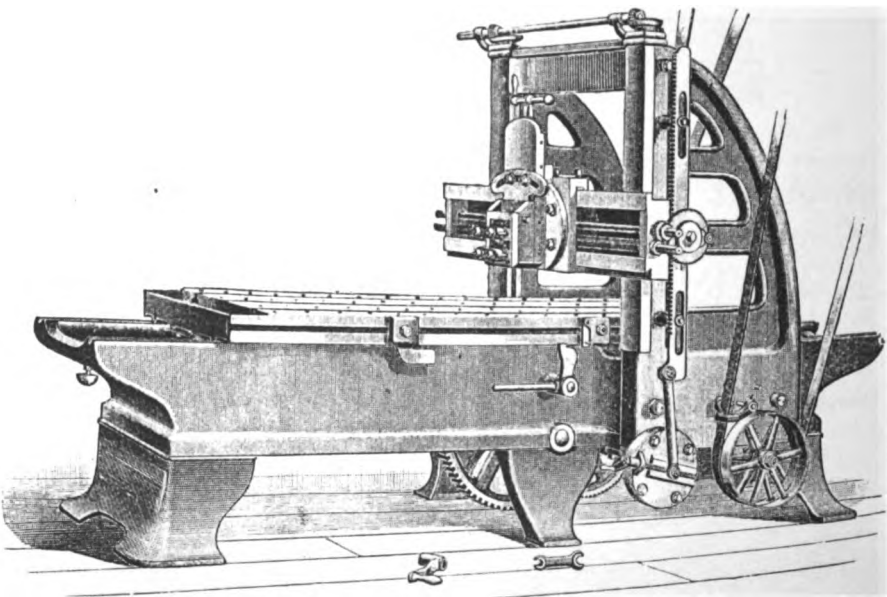


Fig. 1253.

Mill Plane, Width.	Mill Plane, Height.	Mill Plane, Length.	Size.	Counter Pulleys.	Speed.	Weight, About.	Price, Planer, Complete.	Weight, extra foot of Bed, About.	Price, Extra foot of Bed.	Cross Head Saddle, ex.
22 ins.	22 ins.	4 feet	12 ins.x3 ins.		230 Rev.	3300 lbs.	\$530.00	300 lbs.	\$21.00	
24 "	24 "	4 "	12 " x3 "		230 "	3400 "	545.00	300 "	22.00	
26 "	24 "	5 "	12 " x3 "		230 "	4300 "	615.00	400 "	29.00	
26 "	26 "	6 "	12 " x4 "		250 "	4500 "	635.00	400 "	32.00	
30 "	30 "	6 "	12 " x4 "		250 "	5500 "	750.00	500 "	36.00	\$195.00
32 "	32 "	8 "	14 " x5 "		270 "	6500 "	800.00	550 "	38.00	195.00
36 "	32 "	8 "	14 " x5 "		270 "	9500 "	1180.00	600 "	50.00	220.00
36 "	36 "	8 "	14 " x5 "		270 "	10000 "	1250.00	650 "	54.00	225.00
38 "	38 "	8 "	16 " x6 "		290 "	10500 "	1300.00	700 "	54.00	225.00
42 "	42 "	8 "	16 " x6 "		290 "	2000 "	1500.00	750 "	58.00	258.00
48 "	42 "	8 "	16 " x6 "		290 "	14000 "	1700.00	850 "	65.00	258.00
						18000 "	2000.00	900 "	78.00	277.00

16 INCH SWING ENGINE LATHE.

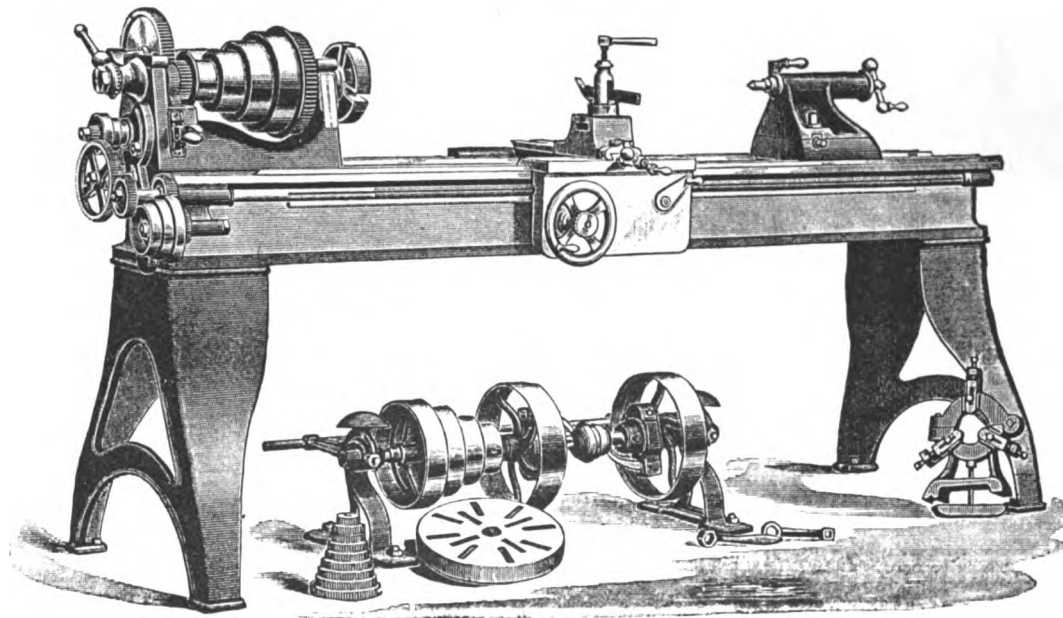


Fig. 1254.

The above cut shows the 16 inch Lathe with 8 foot bed and plain gib rest. Lathe has a steel lead screw, 6 to the inch, and is geared to cut threads from 3 to 32, including  $1\frac{1}{2}$  for pipe threads. The friction feed is operated by a steel worm, working on the slotted screw. The rack is fastened to the side of the bed below the screw, allowing the latter to be placed as close to the under side of the ways as possible. The spindles are large, and the head is strongly geared. I furnish lathe with lock gib raise and fall rest when ordered, and nothing but the best of material and workmanship are used in its construction. The countershaft has friction pulleys 12x3 inches, and should make 120 revolutions per minute.

Length of Bed.	Actual Swing over Bed.	Swing over Raise and Fall Rest.	Swing over Plain Rest.	Distance between Centers.	Price of Lathe.	Price, extra extra foot of Bed.	Compound Rest extra.	Cross Feed extra.
6 feet	16 inches	7 inches	9 inches	3 feet 3 inches	\$350.00	\$10 00	\$25.00	\$15.00

14 INCH SWING ENGINE LATHE.

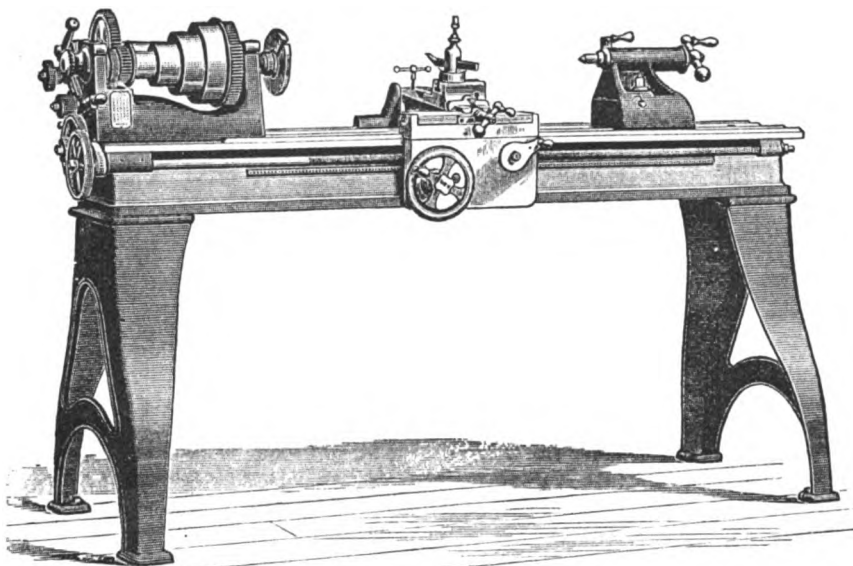


Fig. 1255.

This Lathe is made with plain or raise and fall gib rest. It has steel lead screw, 8 to the inch, operated with open and shut nut. The friction feed is operated by a steel worm in connection with the slotted screw; the general construction is same as the 16 inch swing lathe.

The countershaft has friction pulleys 10 by 3 inches, and should make 150 revolutions per minute.

Length of Bed.	Swing over Bed.	Swing over Raise and Fall Rest.	Swing over Plain Rest.	Will Turn.	Price of Lathe.
6 feet	14 inches	7 inches	$8\frac{1}{4}$ inches	43 inches	\$310.00
Extra for Compound Rest.....\$25.00.					Extra for Cross Feed.....\$15.00.
					Extra for each extra foot of Bed.....\$10.00.

Price, 12 inch Swing Engine Lathe, Fig. 1256.

Length of Bed.	Swing over Bed.	Swing over Raise and Fall Rest.	Swing over Plain Rest.	Will Turn.	Weight of Lathe.	Price of Lathe.
6 feet	12 inches	6 inches	7 inches	43 inches	970 lbs.	\$280.00
Extra for Compound Rest, \$25.00.					Extra for extra foot of Bed, \$10.00	

12 INCH SWING ENGINE LATHE.  
HEAVY PATTERN.

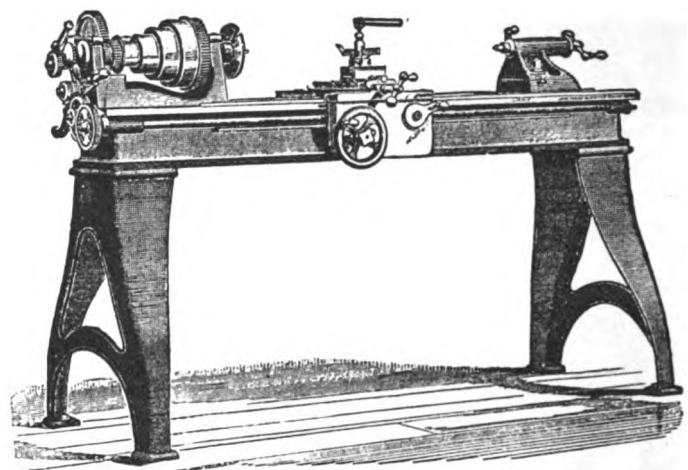


Fig. 1256.

This is a very heavy and strong lathe for its size. It has a forged steel spindle, with a  $\frac{5}{8}$  in. hole its entire length. The rest is wide and heavy, having a bearing of 13 inches on the ways. It is gibbed on both the front and back sides of the bed, and a piece equal in diameter to the full swing of the lathe can be faced up without changing the tool. The lead screw is cut 8 to the inch. It is operated by an open and shut nut of improved construction in the apron. The friction feed is operated by a steel worm working on the splined screw. The racks are fastened to the side of the bed, below the screw, allowing the latter to be placed as close to the under side of the ways as it can be run without touching. All rods, studs, screws and small gears are made of steel. This lathe is also made with lock gib rest, operated with a raise and fall screw, if so ordered, at the same price as for plain rest.

The countershaft has friction pulleys, 10x3 inches, which should make 150 revolutions per minute.



## 12 INCH SCREW CUTTING LATHE.

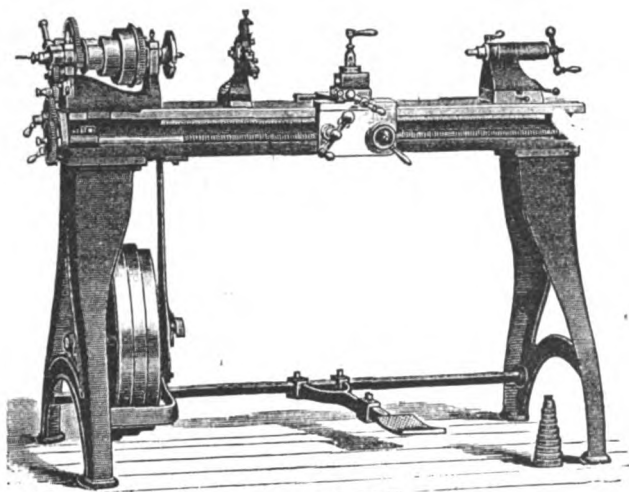


Fig. 1257.

The spindles, screws, studs and feed gears of this Lathe are all steel, and the rack and all gears are cut. The cone has three changes for  $1\frac{1}{2}$  inch belt, and with the back gear gives six changes of speed. It has screw feed operated by an open and shut nut in the apron, and is changed from right to left feed by a reversing lever in the head. Change gears to cut 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28 and 32 threads to the inch go with the Lathe.

Length of Bed.	Distance between Centers.	Swings over Ways.	Swings over Carriage.	Price of Lathe.
4 feet.	28 inches.	12 inches.	$9\frac{1}{2}$ inches.	\$170.00
5 "	40 "	12 "	$9\frac{1}{2}$ "	180.00
6 "	52 "	12 "	$9\frac{1}{2}$ "	190.00

## Prices of Extras.

Rise and Fall Rest.....	\$20.00	Hand Rest Attachment for wood turning.....	\$2.00
Compound Rest.....	20.00	3 inch Screw Chuck.....	2.00
Taper Turning Attachment....	20.00	Spur and Female Centers, each,	1.50
Countershaft when wanted with power.....	12.00	Crotch and Step Centers.. "	1.25
8 inch Face Plate (4 slots)...	3.00	Plain Drill Chuck with set screw.....	1.75
Face Plate for Drill Chucks...	1.50		

## 10 INCH SCREW CUTTING LATHE.

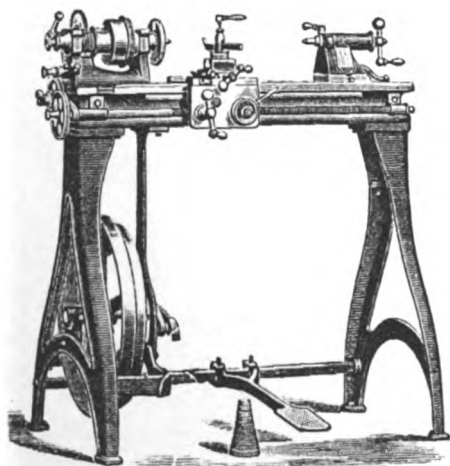


Fig. 1259.

This Lathe is designed especially for a foot power machine. It is same in range and general description as Fig. 1258, except that cone has two changes for  $1\frac{1}{2}$  inch belt.

Length of Bed.	Distance between Centers.	Swings over Ways.	Swings over Carriage.	Price of Lathe.
$3\frac{1}{2}$ feet.	24 inches.	10 inches.	$6\frac{1}{2}$ inches.	\$130.00
$4\frac{1}{2}$ "	36 "	10 "	$6\frac{1}{2}$ "	138.00

## Prices of Extras.

Belt for Foot Power Lathe.....	\$1.00	Screw Chuck, 3 inch.....	\$2.00
Countershaft when wanted with Foot Power.....	10.00	Hand Rest Attachment for wood turning.....	2.00
Compound Rest.....	20.00	Spur and Female Centers, each,	1.50
Centre Rest.....	4.50	Crotch and Step Centers, each,	1.25
Follow Rest.....	3.50	Square Center.....	1.50
8-inch Face Plate (4 slots).....	3.00	Blank Center for holding Chucks	1.00
Set of Four Chuck Jaws, with set screws for same.....	2.00	Plain Drill Chuck with set screw.....	1.75
Face Plate for Drill Chucks....	1.50		

## 10 INCH SCREW CUTTING LATHE.

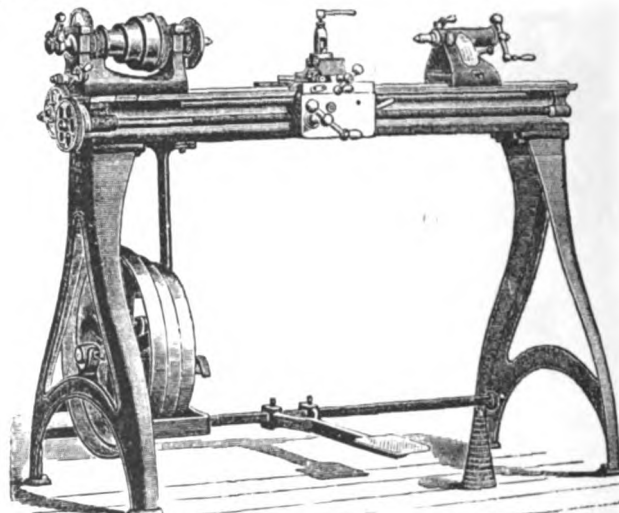


Fig. 1258.

The spindles, screws, studs and feed gears are of steel, and the rack and all gears are cut. The head spindle has a  $\frac{1}{2}$  inch hole through it. Cone has 3 changes for  $1\frac{1}{2}$  inch belt, and with the back gears give ample power for heavy work. Feed operates and is changed same as on 12 inch lathe. Change gears to cut 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28 and 32 threads to the inch go with lathe.

Length of Bed.	Distance between Centers.	Swings over Ways.	Swings over Carriage.	Price of Lathe.
4 feet.	28 inches.	10 inches.	$6\frac{1}{2}$ inches.	\$140.00
5 "	40 "	10 "	$6\frac{1}{2}$ "	150.00

## Prices of Extras.

Belt for Foot Power Lathe.....	\$1.00	Face Plate for drill chucks.....	\$1.50
Countershaft when wanted with foot power.....	10.00	Screw Chuck.....	2.00
Compound Rest.....	20.00	Hand Rest Attachment for wood turning.....	2.00
Centre Rest.....	4.50	Spur and Female Centers, each,	1.50
Follow Rest.....	3.50	Crotch and Step Centers.. "	1.25
8 inch Face Plate (4 slots).....	3.00	Square Centers.....	1.50
Set of Four Chuck Jaws, with set screws for same.....	1.50	Blank Center for holding chucks	1.00
		Plain Drill Chuck, with set screw	1.75

## 9 INCH SCREW CUTTING LATHE.

## Description 9 inch Lathe, Fig. 1260.

The spindles, lead screw, rack studs and all the smaller gears are made of the best machinery steel. The head spindle has a  $\frac{3}{8}$  inch hole its entire length, and the centers correspond to the Morse Taper Socket No. 1. Cone has three changes for a  $1\frac{1}{4}$  inch belt, and with the back gears gives six changes of speed. Feed both for turning and screw cutting is operated by an open and shut nut and lever in the apron. Gears for cutting screws from 6 to 48 are furnished. Compound Rest can be adjusted to any angle, and can also be moved to and from the centers, across the bed of the lathe. The tool is raised and lowered by means of a screw.

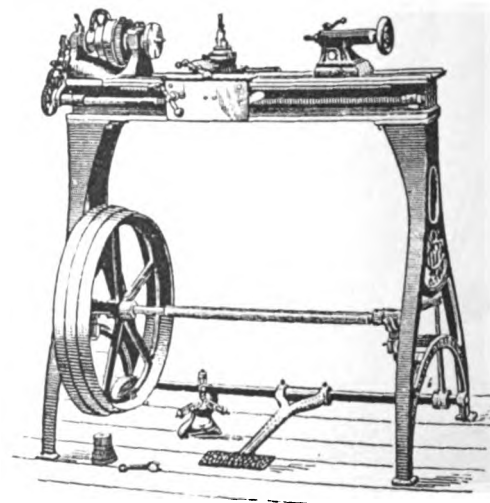


Fig. 1260.

Each 9 inch Lathe is furnished with hollow spindle compound rest, center rest, reversing motion for cutting right or left hand threads, hand rest attachment with long and short T's, belt, a full set of change gears, face plate centers, wrenches, etc., which will enable a workman to do a great variety of work without going to the expense of purchasing a long list of extras.

Length of Bed.	Between Centers.	Swings over Ways.	Weight Pounds.	Price, with Foot Power.	Price, with Countershaft.	Price, on Short Legs.
41 ins.	24 ins.	9 ins.	300	\$75.00	\$75.00	\$75.00
53 "	36 "	9 "	320	85.00	85.00	85.00

## Prices of Extras.

Countershaft, when wanted with Foot Power.....	\$10.00	Screw Chuck, 3 inch.....	\$2.00
8-inch Face Plate (4 slots).....	3.00	Spur and Female Centers, each,	1.50
Set of Four Chuck Jaws, with set screws for same.....	2.00	Crotch and Step " ".....	1.25
Face Plate for Drill Chucks....	1.50	Square Center.....	1.50
		Blank Center for holding Chucks	1.00
		Plain Drill Chuck, with set screw.....	1.75



HAND LATHE.

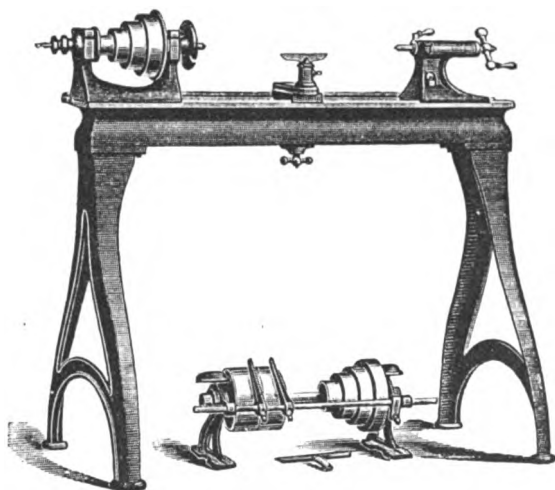


Fig. 1261.

Length of Bed.	Between Centers.	Swing.	Price of Lathe.	Length of Bed.	Between Centers.	Swing.	Price of Lathe.
3 1/4 feet	24 ins.	10 ins.	\$65.00	7 feet	58 ins.	14 ins.	\$124.00
4 "	28 "	12 "	80.00	8 "	70 "	14 "	127.00
5 "	40 "	12 "	83.00	5 "	34 "	16 "	130.00
6 "	52 "	12 "	86.00	6 "	46 "	16 "	134.00
4 "	22 "	14 "	115.00	7 "	58 "	16 "	138.00
5 "	34 "	14 "	118.00	8 "	70 "	16 "	142.00
6 "	46 "	14 "	121.00				

FOOT POWER HAND LATHE.

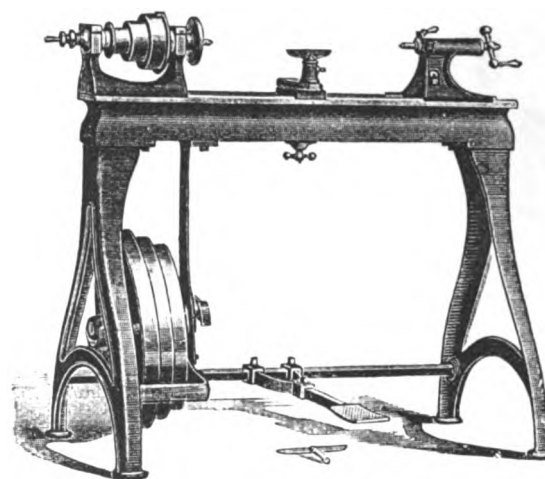


Fig. 1262.

Length of Bed.	Distance between Centers.	Swing.	Price of Lathe.
3 1/4 feet	24 inches	10 inches	\$75.00
4 "	28 "	12 "	92.00
5 "	40 "	12 "	95.00
6 "	52 "	12 "	100.00
Back Gears, for 12 inch Lathe.....extra,			15.00
Countershaft .....			10.00

BACK GEARED HAND LATHES, Fig. 1261.

Length of Bed.	Between Centers.	Swing.	Price of Lathe.	Length of Bed.	Between Centers.	Swing.	Price of Lathe.	Length of Bed.	Between Centers.	Swing.	Price of Lathe.
4 feet	28 ins.	12 ins.	\$95.00	4 feet	22 ins.	14 ins.	\$140.00	7 feet	58 ins.	14 ins.	\$149.00
5 "	40 "	12 "	98.00	5 "	34 "	14 "	143.00	8 "	70 "	14 "	152.00
6 "	52 "	12 "	101.00	6 "	46 "	14 "	146.00	5 "	34 "	16 "	160.00
								7 "	58 "	16 "	168.00
								8 "	70 "	16 "	172.00

LITTLE FAVORITE 6 INCH AMATEUR LATHE.

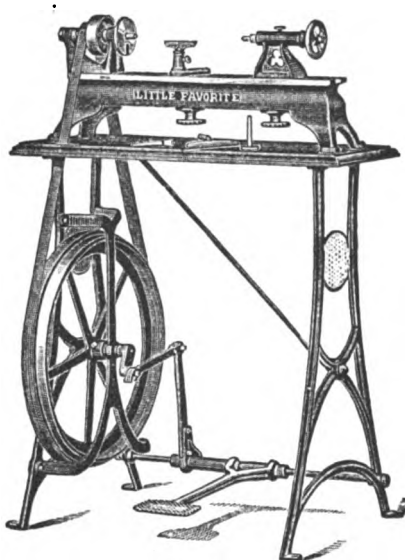


Fig. 1264.

IMPROVED BENCH LATHE.

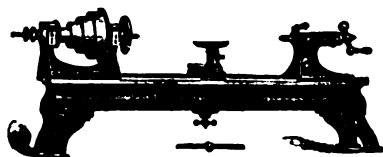


Fig. 1263.

Length of Bed.	Between Centers.	Swing.	Price of Lathe.
3 1/2 feet	24 inches	10 inches	\$65.00
4 "	28 "	12 "	80.00
5 "	40 "	12 "	83.00
6 "	52 "	12 "	86.00

BACK GEARED BENCH LATHES.

Length of Bed.	Between Centers.	Swing.	Price of Lathe.
4 feet	28 inches	12 inches	\$95.00
5 "	40 "	12 "	98.00
6 "	52 "	12 "	101.00
Back Geared Lathes have a 3 section cone lever feed for tail spindle.....extra,			5.00

PEERLESS 8 INCH AMATEUR LATHE.

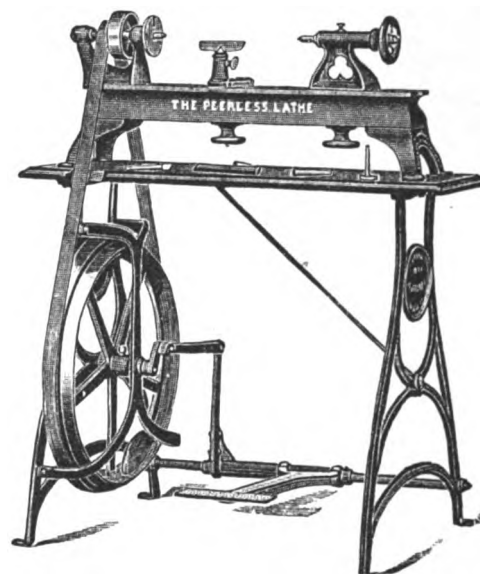


Fig. 1265.

The Lathe is made entirely of steel and cast iron, and top of table is hard wood handsomely finished. Lathe will turn a piece 13 inches in length by 6 inches in diameter. The head spindle runs in adjustable conical bearings, so that it can at all times be kept tight, and in line with the dead center, and has a 1/4 inch hole through it. The two section cone takes a 1 inch flat belt. The face plate screws on the end of the spindle, and the centers are fitted to carefully reamed taper holes.

Foot Lathe complete, as per cut.....\$25.00

Lathe, without the Table.....	\$13.00
Table alone.....	12.00
Countershaft.....	4.00
Slide Rest.....	10.00
Set of 10 Slide Rest Tools, size 1/2 x 1/4 inch.....	2.00
Set of 6 Slide Rest Tools, size 1/2 x 1/4 inch.....	1.20

Almond Drill Chuck, holds from 0 to 1/2 inch.....	\$5.00
Champion Chuck, for small work to 2 inches.....	4.50
Champion Chuck, for small work to 3 inches.....	5.50
Extra Set of Jaws for holding Drills.....	1.25

The Peerless Lathe has been designed to meet the demand for a cheap Foot Lathe of larger capacity than the Little Favorite, Fig. 1264. It will turn a piece 18 inches in length by 8 inches in diameter. It has a 1/8 inch hole through the head spindle for convenience in turning the ends of wire rods, etc. The balance wheel is turned and hung in double bearings, which support it on each side, and is provided with improved foot motion.

Foot Lathe complete, as per cut..... \$35.00  
Lathe, extra length, to turn 36 inches..... 45.00

Lathe, without the Table.....	\$18.00
Table alone.....	17.00
Countershaft.....	6.00
Scroll Saw Attachment.....	5.00
Circular Saw Attachment, with two Saws.....	10.00
Slide Rest.....	12.00

Set of 10 Slide Rest Tools, size 1/2 x 1/4 inch.....	\$2.00
Set of 6 Slide Rest Tools, size 1/2 x 1/4 inch.....	1.20
Champion Chuck, 3 inch fitted.....	5.00
Extra Set of Jaws for same.....	1.25

## WOOD TURNING LATHE.

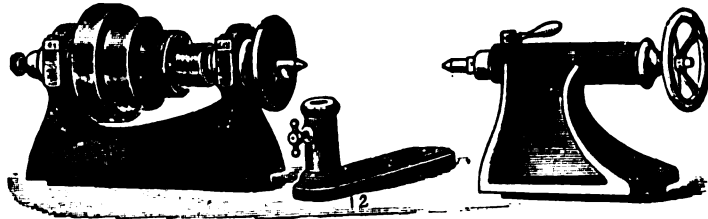


Fig. 1266.

The above cut represents Wood Turning Lathe designed to be used with wooden shears. It is made very heavy, and the workmanship is of the best quality. The bearings are large, and fitted by scraping. The cone pulley on the head spindle is reversed for greater convenience in doing many kinds of work. It is made 10, 12, 14, 16, 18, 20 and 24 inches swing; also, 16, 18, 20 and 24 inches with a back face plate for pattern makers' use. Countershaft is fitted with belt shifting attachment complete, requiring only the fitting of a handle. The 10 and 12 inch lathes have a three section iron cone turned inside to balance it; the other sizes have a four section cone, the small section being iron and the others of hard wood with iron flanges at both ends keyed to the spindle.

## Prices, Wood Turning Lathes.

Swing, Inches,	10	12	14	16	18	20	24
Lathes, each,	\$50.00	60.00	70.00	80.00	95.00	110.00	120.00

## Prices, Pattern Maker's Lathes.

Swing, Inches.....	16	18	20	24
Lathes, each.....	\$110.00	125.00	135.00	150.00

Prices for Wood or Iron Beds on application.

## CHEAP LATHE HEAD.

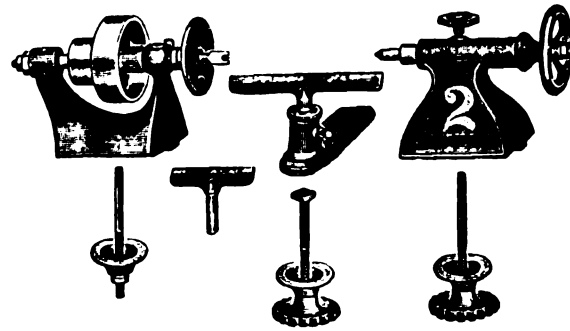


Fig. 1267.

These heads are offered to meet the demand for a machine of lower price than the Wood Turner's Lathe. They are well made and the bottoms are planed to bring the centers in line. The Nos. 1 and 2 have cone pulley for two, the Nos. 3 and 4 for three changes of speed. The spindles are of steel well fitted. Price of Heads includes head and tail rest socket with two T's, Face Plate, Flat Center, Tail Center, with bolts and hand wheels for fastening to the bed.

## Prices, Lathe Heads and Balance Wheels.

Lathe Heads including all extras as specified above.			Turned Balance Wheels including shaft boxes and crank for operating Lathe by foot power.			
Nos.	Swing.	Price.	Nos.	Diam.	Weight.	Price.
1	6 inches	\$10.00	1	20 ins.	30 lbs.	\$8.00
2	8 "	15.00	2	22 "	40 "	10.00
3	11 "	20.00	3	22 "	60 "	13.00
4	13 "	30.00	4	22 "	60 "	15.00

## Prices, Countershafts.

Nos.	Size of Pulleys.	Price.	Nos.	Size of Pulleys.	Price.
1	3x1 inch	\$7.00	3	5x2 ins.	\$10.00
2	4x1 1/2 "	8.00	4	6x3 "	12.00

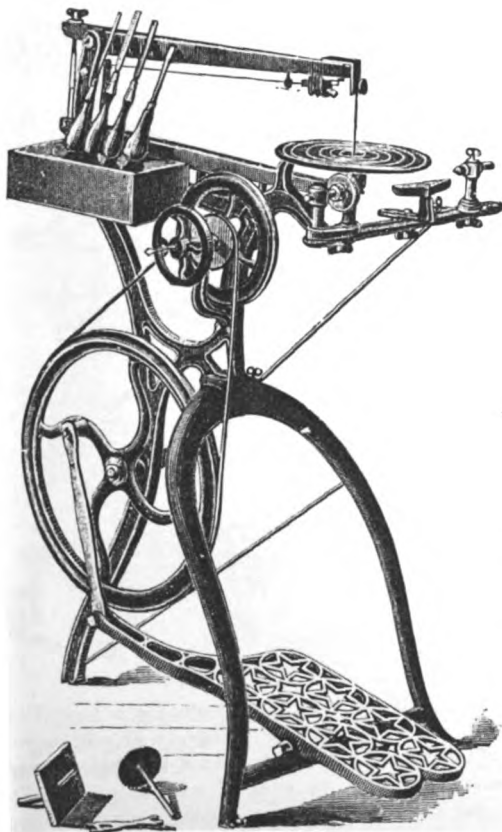
SCROLL SAW.  
With Lathe Attachment.

Fig. 1268.

This Saw will cut lumber from  $\frac{1}{8}$  to 2 inches in thickness. Machine complete, with scroll sawing attachment, circular saw attachment, lathe attachment, drilling attachment, and solid emery wheel.....\$10.00  
Machine without lathe and circular saw attachments.....8.00

Drilling attachment includes 6 steel drills, assorted sizes. Lathe attachment includes 3 turning tools.

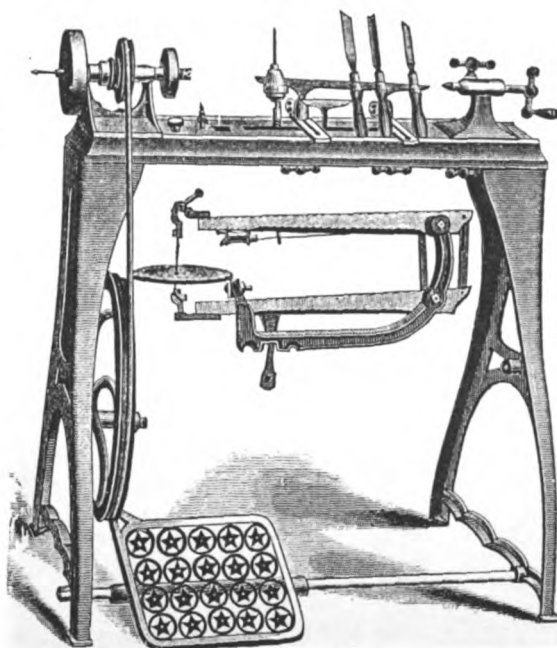
AMATEUR LATHE.  
With Scroll Saw Attachment.

Fig. 1269.

This Lathe is patterned almost exactly after the latest improved lathe now used in the best machine shops and pattern makers' rooms. The large driving-wheel has two grooves of varying depths on its face to give a change of speed as the belt runs from it to the cone pulley on the lathe head. Lathe head is provided with a 2 inch face plate, a spur center, a screw center for turning cups and drill chuck to hold  $\frac{1}{8}$  to  $\frac{1}{4}$  inch round twist drills for drilling wood or iron. On outer side of pulley is a 4 1/2 by 1/4 inch solid emery wheel and drill spindle, with set screw, to hold drill points for wood drilling. Price includes long and short tool rest, five turning tools, wrench, drill points, etc.

Lathe and Lathe Tools complete.....\$10.00  
Scroll Saw Attachment.....extra, 2.00

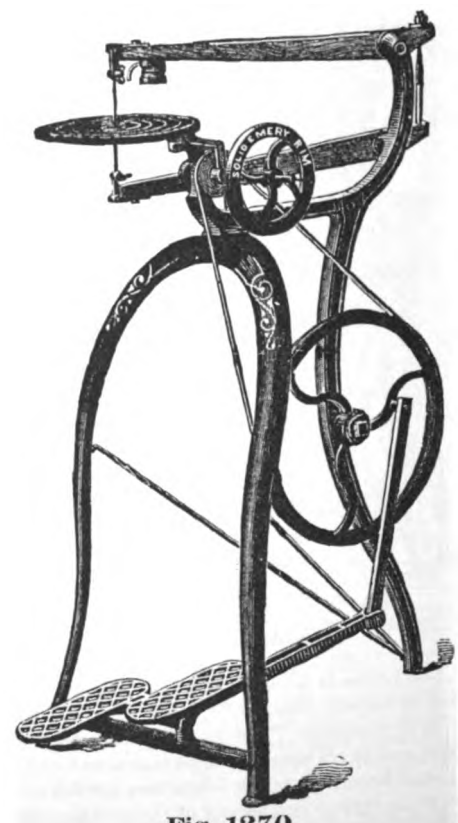
SCROLL SAW.  
All Iron.

Fig. 1270.

This Saw has all the latest improvements and is the best cheap Saw in the market. Framework is iron, arbors are made of steel; arms and pitman are of best selected ash. All parts are made interchangeable.

No. 2 Nickel Plated Table, with emery wheel, 6 saw blades, wrench, sheet of designs and 3 Drill points.....\$4.00  
No. 1 Japanned Table complete as above, except emery wheel.....3.50

**CIRCULAR SAW.**  
For Hand or Foot Power.

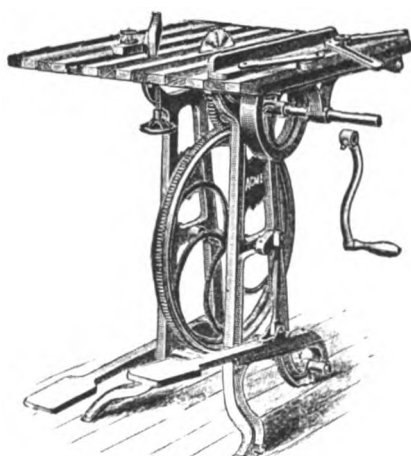


Fig. 1271.

This machine is designed for carpenters and other wood workers, who have no steam power. It is strong, substantial and thoroughly well built, suitable for various kinds of work, in cutting off, ripping, mitering, rabbeting and grooving, and with the addition of the extra attachments, scroll sawing, boring, etc.

It has the most powerful treadle motion ever offered with a circular sawing machine, consisting of double treadles, with a walking motion, which enables the operator to use both feet when sitting or one foot when standing.

Saw Table complete, with two 7 inch Saws.....	\$40.00
Scroll Saw Attachment.....extra,	7.00
Boring Attachment....."	10.00

**HAND SAWING MACHINE.**  
Self-feeding.

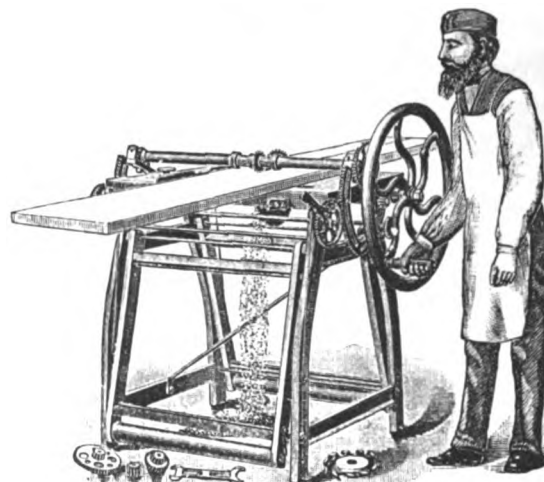


Fig. 1272.

This machine is adapted to the use of carpenters and all wood workers. With this machine one man can with ease rip up a 2 inch hard wood or a 3 inch soft wood plank, and do the work of three men with ordinary hand saws. It is made in the most durable manner, and cannot get out of order. The bed, frame and running parts are of iron, the saw arbor is of steel, 1 1/4 inches in diameter, with two bearings, each 3 3/4 inches long. Hand wheel is 2 feet in diameter and weighs 56 pounds. An extra table is also furnished, with rip and mitering gauges, for mitering, rabbeting and cross-cutting.

Saw Table, with extra Table and two 10 inch Saws.....	\$75.00
Without extra Table, with one 10 inch Rip Saw.....	65.00
Grooving Cutter or Plow, extra, 1/2, 3/8, 1/4 or 1/8 inch.....	6.00

**IMPROVED SPLITTING SAW TABLE.**

Wood Frame.

**Description Saw Table.**

This machine has a hard wood frame, well seasoned. The top is made of narrow strips of different woods glued up, and being fastened to cross girts, cannot warp or split. Each table is furnished with patent self-oiling arbors, also patent saw gauge, which can be adjusted to any width, and also to saw straight or on any bevel required.

**Patent Saw Gauge.**

Sold separate from the table when desired. This gauge is a great improvement over the old style, being easily adjusted to saw any width, and held firmly in place while at work. It can readily be attached to any saw table.

Made for all sizes of tables as per list below.

Each .....\$6.00

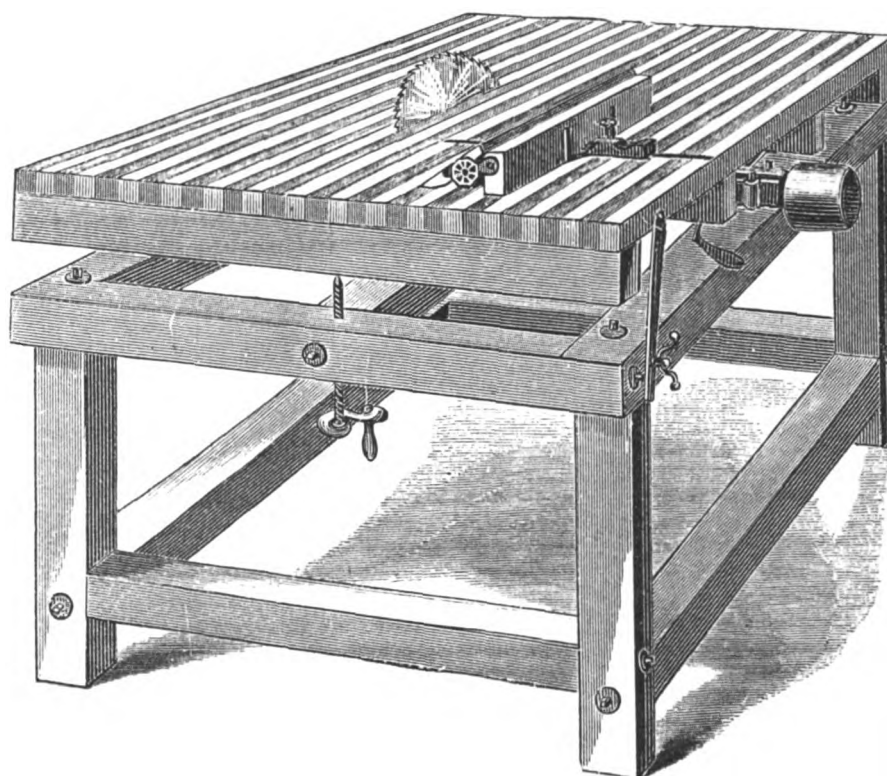


Fig. 1273.

**Improved Saw Arbors with Patent Self-Oiling Boxes.**

These Arbors are made of the best cast steel, and finished in the best possible manner.

The boxes are cast on a solid bed, which connects the two together in such a manner that it is impossible for them to get out of line. Every Arbor is ground into the boxes and run before being sent out, and I warrant them to be in perfect running order. I can furnish, when desired, Yoko Arbors with the pulleys in the center or between the boxes, and made self-oiling with solid frame. I furnish a wrench with each arbor, and a pawl to hold it while turning the nut.

For dimensions and prices of Arbors see below.

Nos. of Tables.	Dimensions of Tables.		Nos. of Arbors.	Sizes of Pulleys, Diam. Face.		Size of Saws to Use.	Speed, Revolutions.	Horse Power Required.	Prices, Wood Table.	Prices, Iron Table.	Prices, Arbors only.
1	2 feet	6 inches x 4 feet 0 inches	1	4 inches	5 inches	6 to 12 inches	2700	2	\$55.00	\$85.00	\$14.00
2	2 "	10 " x 4 " 8 "	2	4 1/2 "	5 "	12 to 16 "	2400	4	60.00		16.00
3	3 "	0 " x 5 " 0 "	3	5 "	6 "	16 to 20 "	2000	6	66.00	100.00	18.00
4	3 "	4 " x 5 " 6 "	4	5 1/2 "	6 "	20 to 24 "	1500	8	74.00		21.00
5	3 "	6 " x 6 " 0 "	5	6 "	7 "	24 to 30 "	1250	10	80.00	135.00	25.00
6	3 "	8 " x 6 " 0 "	6	8 "	8 "	30 to 36 "	1000	12	88.00		30.00

For prices of Circular Saws, all sizes, see page 208.

## UNIVERSAL SAWING MACHINE.

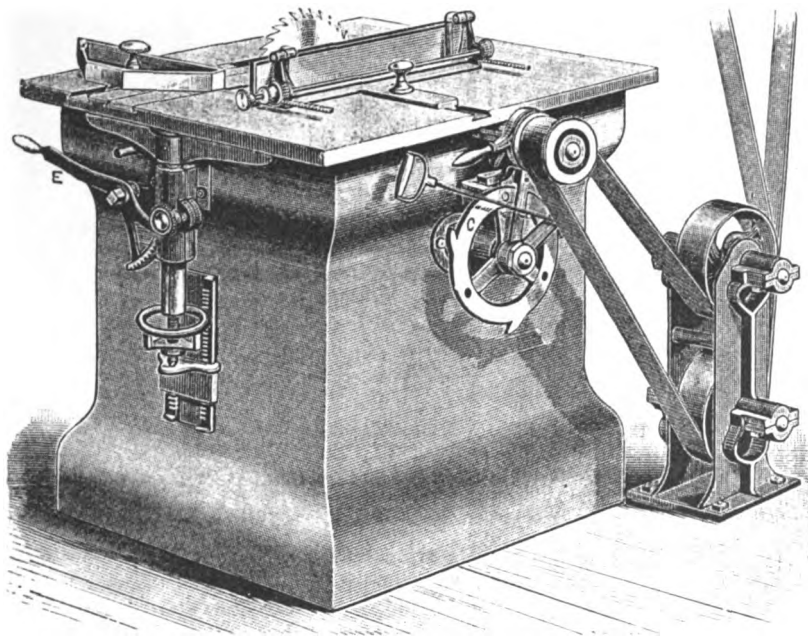


Fig. 1274.

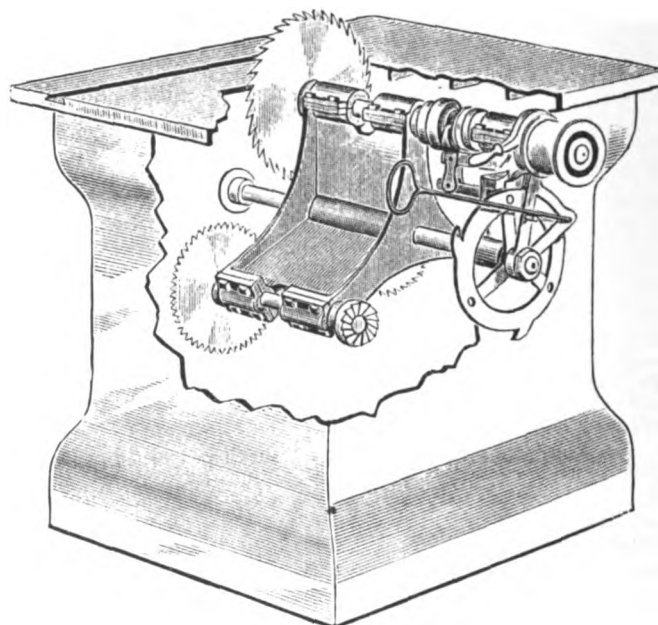


Fig. 1275.

This machine is designed for a large variety of work; the changes can be made quickly and still sufficient driving power be maintained for any work that may be required. The frame is cast-iron, to which is attached all the running gear. The driving shaft bearings are cast on the frame, thus making it perfectly rigid, without any vibration when running. It has three arbors, any one of which can be brought into axis line instantly and ready to run, the other two remaining at rest. No time is lost in changing from splitting to cutting off, and vice versa; all three saws can be changed in less time than it takes to change one on any other saw table.

The table is raised by the lever in front, and clamped in any position and held perfectly secured. The table is planed perfectly true, and has an adjustable opening,  $3\frac{1}{2}$  inches wide, for rabbeting, matching, grooving, tenoning, etc. The cutting-off rest is made to set at any angle from 0 to  $45^\circ$ . The slide rest or splitting fence is also made to set at any angle, from 0 to  $45^\circ$ ; it has a movement the entire breadth of the table, and is clamped to same by a beaded nut.

The machine can be belted from above, below or horizontally; the carrier stand, with pulleys, shown in cut, is to take the place of counter when driven from above.

Table is  $44 \times 34$  inches. Pulley on saw arbor is  $3\frac{3}{4}$  inches diameter, 4 inches face. Will take three saws, one 15 inches, two 14 inches diameter. Speed of saw about 2700 revolutions per minute. Tight and loose pulleys on countershaft 8 inches diameter, 6 inches face. Driving pulley 24 inches diameter, 4 inches face. Weight of machine, 1000 pounds.

No. 1. Complete with countershaft ready for attaching saws.....\$250.00

## COMBINATION MITRE CUT-OFF AND SPLITTING SAW.

## Tilting Top.

This Saw Table is made throughout of iron and steel, and is put together in a most thorough manner. The table, which is planed perfectly true, is 3 feet by 3 feet 3 inches, and is arranged to tip to any angle up to  $45^\circ$ . It is provided with a splitting gauge and two cut-off gauges for common or mitre work. The saw arbor is attached to a yoke that swings on a shaft at the back of the machine, and is raised and lowered by means of a screw and hand-wheel convenient to the hand of the operator. The tilting device is also conveniently arranged, and all necessary adjustments are made from front of the machine.

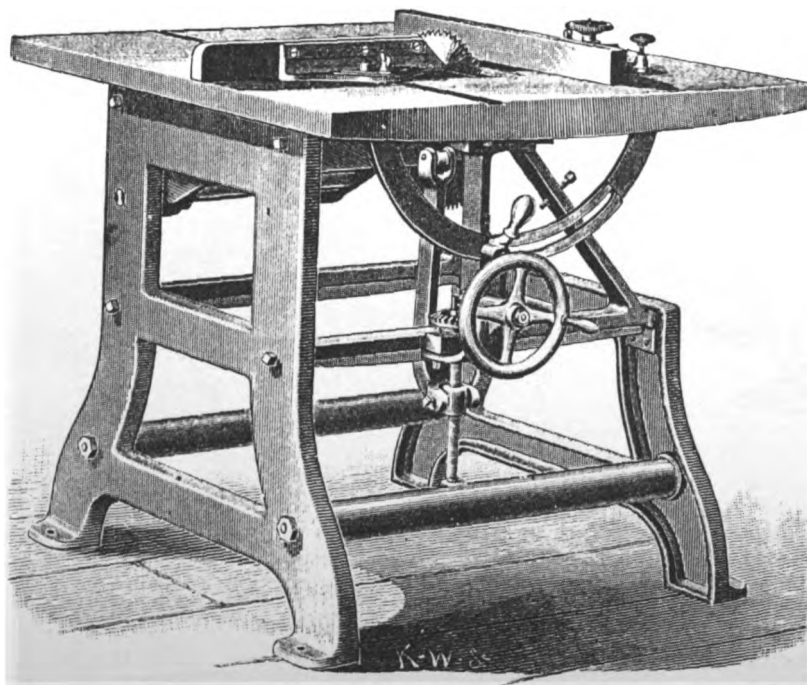


Fig. 1276.

For prices of Circular Saws, all sizes, see page 208.

This table is calculated to carry 14 inch saws. Size of mandrel for saw is 1 inch. Saws are not furnished unless especially ordered, and are not included in price of table given below. A countershaft with 14 inch hangers is furnished with the machine, and should be placed 5 feet from center of saw arbor. Tight and loose pulleys are  $8\frac{1}{2}$  inches diameter by  $4\frac{1}{2}$  inches face, and should make 550 revolutions per minute; 2 or 3 horse power is required to drive saw. Weight of machine is about 825 pounds.

Price complete, with countershaft, without saw....\$135.00



## FRET SCROLL SAW.

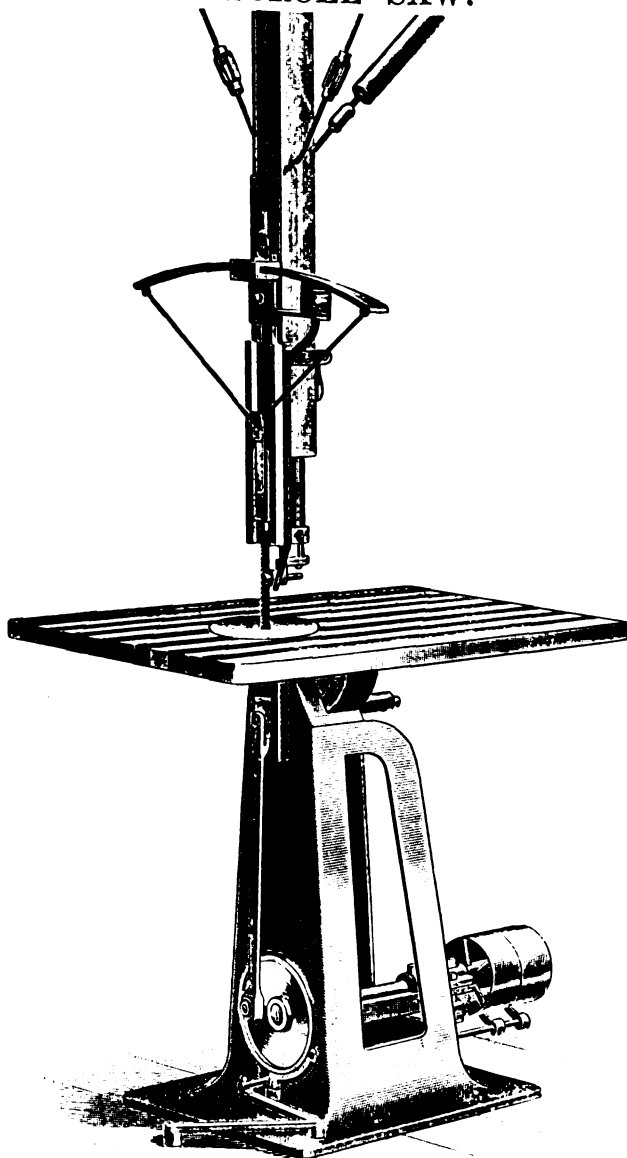


Fig. 1277.

This machine, recently produced from entirely new designs, has a very substantial iron frame, with base of good size. The working parts are all carefully made, and the machine put together in the most workmanlike manner. The top, which is of iron, is arranged to tilt in either direction, and is held in any desired position very firmly. The upper works are simple, but very effective. They are adjustable for saws from 12 to 18 inches in length, and the strain is also adjustable to proper tension for various saws used. The saws are held at the bottom by an automatic clamp, into which the blade is pushed through the table, and at the top by a hook. Machine is instantly stopped and started for a change of saws, and is provided with a blower for removing saw dust.

This is an excellent machine, and produces perfect work.

Tight and loose pulleys are 7x2 $\frac{1}{2}$  inches, and should make 900 revolutions per minute. Weight, 400 pounds.

Fret Scroll Saw complete.....\$90.00

## FAY'S PATENT SCROLL SAW BLADES.

These saw webs are made from 13 to 16 gauge in thickness.

Length, inches.....	8	9	10	11	12	13
Per dozen.....	\$2.50	2.75	3.00	3.25	3.50	3.75
Length, inches.....	14	16	18	20	22	24
Per dozen.....	\$4.00	4.50	5.00	5.50	6.00	6.50

Webs to 16 inches, over  $\frac{3}{4}$  inches wide, extra price.

Webs from 18 to 24 inches, over 1 inch wide, extra price.

## IMPROVED BAND SAW.

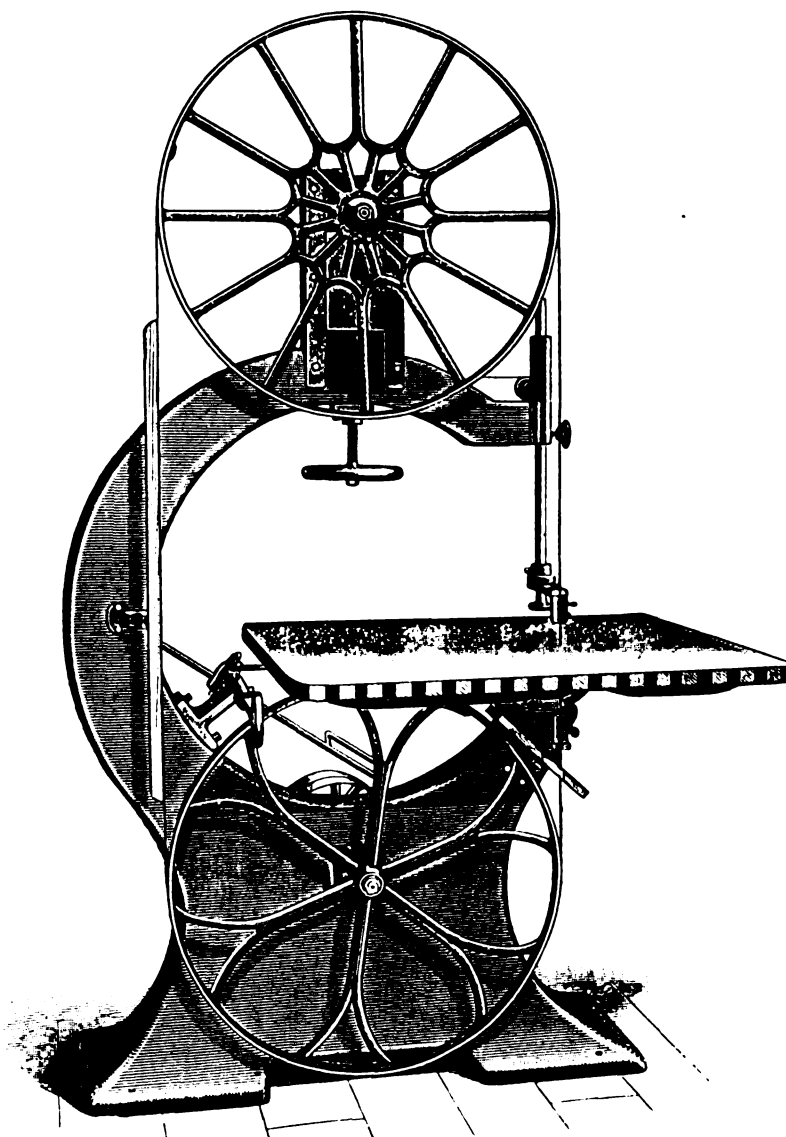


Fig. 1278.

This machine is designed for all ordinary classes of work. It is heavy and well made, the frame or column is cast in one piece, and stiff enough to guarantee the perfect alignment of all the parts. The wheels are of iron, 36 inches in diameter, and have rubber tires to give them elasticity and increased cohesion with the saw.

The wheel shafts run in self-oiling boxes hung on pivots, and by means of hand screws are easily tilted to change the track of the saw blade. The tension of the saw is regulated by the upper wheel, which is hung in a gibbed frame, and is quickly adjusted by a large hand wheel. The guides are of improved design, and the upper one adjusts to 13 inches above the table, and is provided with a compensating balance weight hung inside of the column. The table is of wood glued up in narrow strips to prevent warping, and has an adjustment for bevel sawing.

Each machine is supplied with brazing vise and tongs and one  $\frac{1}{2}$  inch French saw blade. I can furnish extra any size of blade desired. Tight and loose pulleys on the machine are 12 inches diameter and 4 inches face, and should make 350 revolutions. Shipping weight, 1650 pounds.

Band Saw complete, as above.....\$175.00

## FRENCH STEEL BAND SAW BLADES.

When ordering give width, gauge and length, also whether to be joined, set and sharpened.

Width, inches.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
Gauge.....	21	21	21	21	20	20
Per foot.....	\$0.07	.08	.10	.12	.14	.16
Width, inches.....	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$
Gauge.....	20	20	19	19	19	19
Per foot.....	\$0.18	.20	.23	.26	.28	.34

Setting and filing, 4 cents per foot extra.

Brazing or joining Band Saws extra.



**POWER MORTISING MACHINE.**

With Boring Attachment.

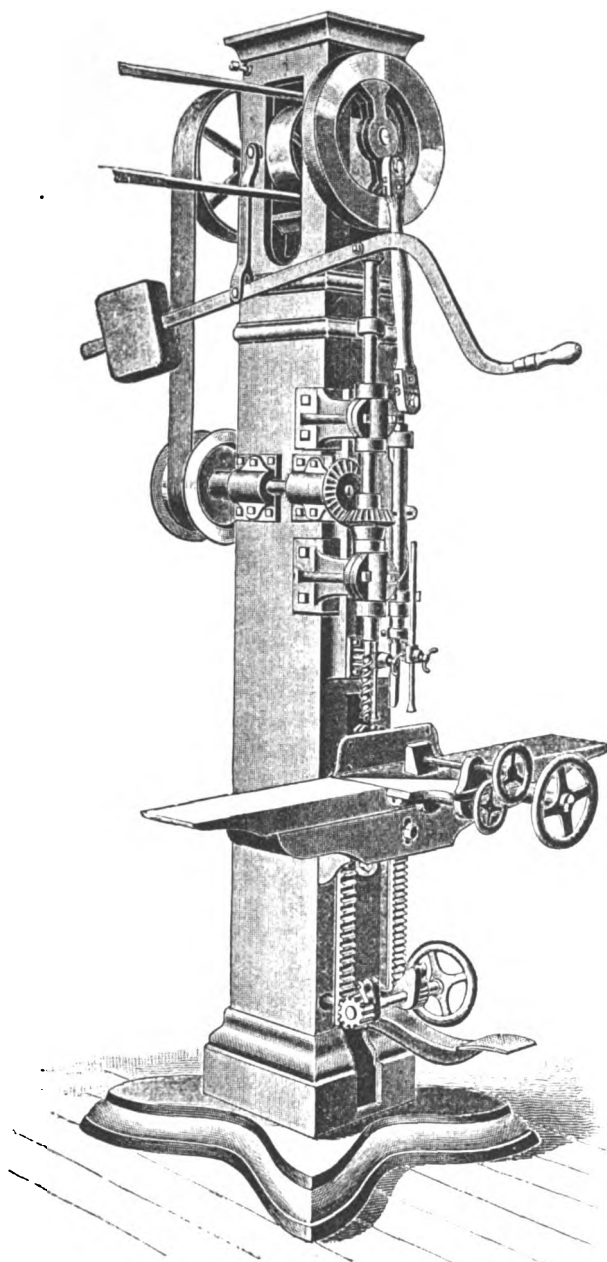


Fig. 1279.

This machine is especially adapted for ordinary work in hard wood and the heavier classes of building work, etc. The chisel has a rapid perpendicular motion, and is brought down to the work by the treadle, and carried up by the balance weight on back end of treadle. It is self-reversing, turning the chisel when the treadle is let up, at each end of the mortise. The machine has the boring apparatus, which is set on the same line with the chisel, so that the work can be bored and then run under the chisel and mortised without unclamping it from the bed. The bit-shaft is run by a belt from the chisel-shaft, and so arranged that when the chisel is working the bit stops, and as the chisel is let up by the treadle the bit starts ready for boring.

The driving pulley is 10 inches diameter, 3 inches face, and should make 300 revolutions per minute. The machine may be driven from a main line, if it is level with the pulley in top of machine. If not, a counter will be needed, to set on a level with the pulley, and 8 or 10 feet distant.

Weight of machine, not boxed, 1450 pounds. Power required to drive mortiser, 1 horse.

Machine complete, with 1 each Chisel and Bit,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and 1 inch...\$270.00  
Without Boring Apparatus and Bits..... 210.00

**PATENT POWER MORTISING CHISELS.**

Width, inches.....	$\frac{1}{4}$ and less.	$\frac{1}{2}$ to 1	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2
Each.....	\$1.50	1.75	2.00	2.00	2.00	3.00	3.00

**FOOT MORTISING MACHINE.**

New Pattern.

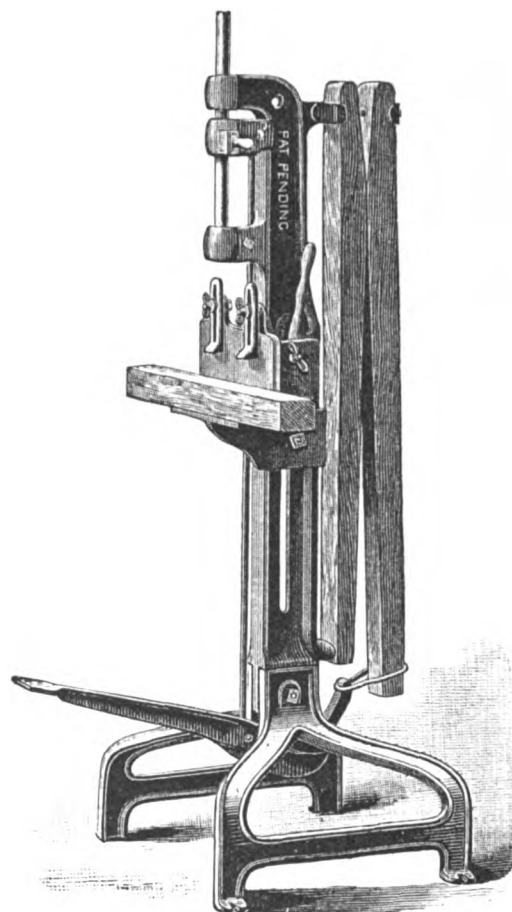


Fig. 1280.

This new pattern Foot Mortiser takes up but little space, and can easily be moved around or taken to the building where the work is needed. The wear on the spindle can be taken up perfectly, consequently the workman is not annoyed in not being able to work to his lines. The chisels are made from the best tool steel; directions are attached to make the chisels reverse true, should they accidentally get bent. The face plate is planed true, chisels are lipped to withdraw the chips from mortise; springs are made from choice ash.

Greatest distance from spindle to rest, 21 inches.

Mortising Machine, with 1 Chisel each $\frac{3}{8}$ , $\frac{1}{2}$ and $\frac{5}{8}$ inch.....	\$22.00
Extra Chisels up to $\frac{3}{4}$ inch.....each,	1.00
Blind Chisels, with $\frac{3}{4}$ , 1, $1\frac{1}{4}$ and $1\frac{1}{2}$ inch cutters, complete.....	4.50

**VERTICAL BORING MACHINE.**

With one Spindle.

The bit has a vertical throw of 12 inches and stands 10 inches from the post. The table is raised and lowered by means of a screw and hand-wheel, and is pivoted to facilitate boring at any angle. The tight and loose pulleys on the countershaft which is attached to the machine are  $8\frac{1}{2}$  inches diameter,  $3\frac{1}{2}$  inches face, and should be speeded to 500 revolutions per minute. Weight of machine, 800 pounds.

Boring Machine, with 1 Bit each  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$ ,  $\frac{7}{8}$  and 1 inch..... \$135.00

**HORIZONTAL BORING MACHINE.**

With one Spindle.

The bit has a throw of 8 inches and is brought forward by means of a jointed treadle, to which the weight is attached. The bit shaft is supplied with a stop collar to gauge the depth of hole, and the treadle has a pin to regulate the throw.

Countershaft with cone pulleys for two changes of speed is attached to the machine. The tight and loose pulleys are  $8\frac{1}{2}$  inches diameter,  $3\frac{1}{2}$  inches face, and should make 1200 revolutions per minute.

Weight complete, 700 pounds. Power required, 2 horse.

Boring Machine, with 1 bit each  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$ ,  $\frac{7}{8}$  and 1 inch.....\$145.00

## IMPROVED DANIELS PLANING MACHINE.

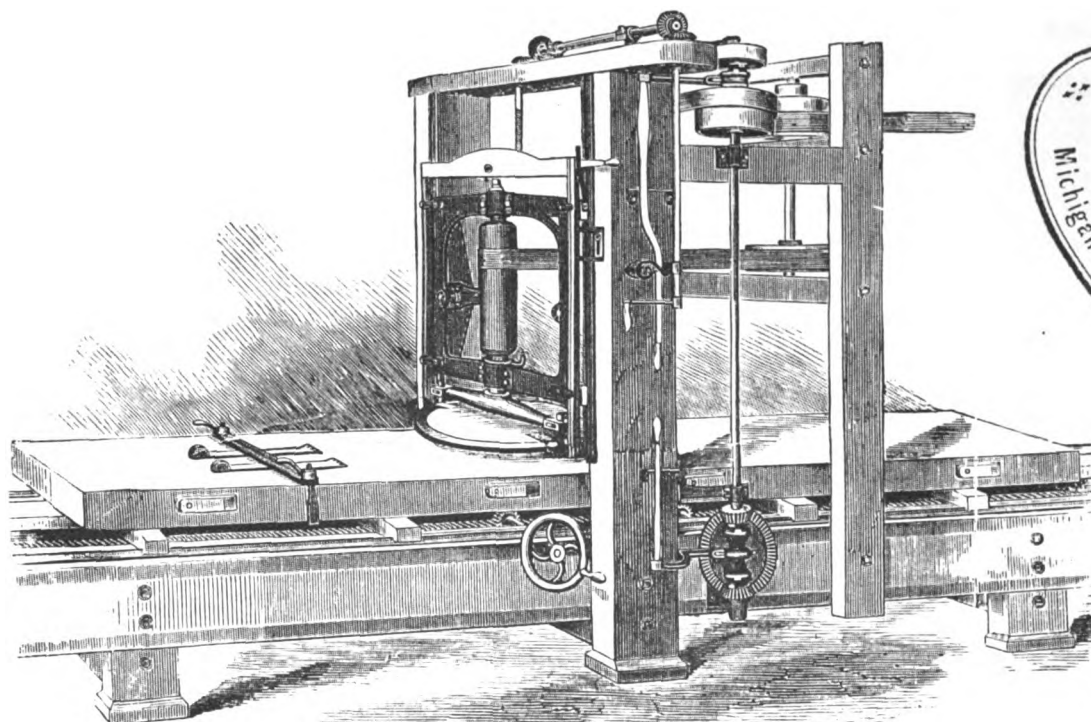


Fig. 1281.

## Description.

This is the most perfect dimension wood planing machine in use. It is made to true out, square up and bevel with the utmost precision hard and soft wood, the heaviest dock, ship, bridge, railroad car, and mill work, any length or width, and is easily applied to the largest or smallest carpenter work, machinery, sash and doors, pianofortes, cabinet, coach and carriage work, fancy toys, and almost everything made of wood.

The fast and loose pulleys, to all machines that plane 27 inches wide and less, are 12 inches in diameter, 5 inches face, and should make 500 revolutions per minute. To plane 30 and 36 inches wide, 15 inch pulleys, 6 inch face, and should make 400 revolutions per minute. All widths over that, 15 inch pulleys, 8 inch face, and should make 350 revolutions per minute. Power required to drive planer, 4 to 10 horse.

## Dimensions and Prices.

To plane width.	18 ins.	20 ins.	24 ins.	27 ins.	30 ins.	36 ins.	42 ins.	48 ins.	To plane width.	18 ins.	20 ins.	24 ins.	27 ins.	30 ins.	36 ins.	42 ins.	48 ins.
7 feet long.....	\$245.00	295.00	330.00	372.00	406.00	470.00	520.00	575.00	14 feet long.....	\$294.00	316.00	386.00	435.00	469.00	533.00	583.00	645.00
8 " " " " " " " "	252.00	302.00	338.00	381.00	415.00	479.00	520.00	585.00	15 " " " " " " " "	301.00	353.00	394.00	444.00	478.00	542.00	592.00	655.00
9 " " " " " " " "	259.00	309.00	346.00	390.00	424.00	488.00	538.00	595.00	16 " " " " " " " "	308.00	361.00	402.00	453.00	487.00	551.00	601.00	665.00
10 " " " " " " " "	266.00	316.00	354.00	399.00	433.00	497.00	547.00	605.00	17 " " " " " " " "	315.00	369.00	412.00	462.00	496.00	560.00	610.00	675.00
11 " " " " " " " "	273.00	323.00	362.00	409.00	442.00	506.00	556.00	615.00	18 " " " " " " " "	322.00	377.00	420.00	471.00	505.00	569.00	619.00	685.00
12 " " " " " " " "	280.00	330.00	370.00	417.00	451.00	515.00	565.00	625.00	19 " " " " " " " "	329.00	385.00	428.00	480.00	514.00	578.00	628.00	695.00
13 " " " " " " " "	287.00	338.00	378.00	426.00	460.00	524.00	574.00	635.00	20 " " " " " " " "	346.00	403.00	446.00	500.00	533.00	597.00	647.00	715.00

This Planer can be made with any length of bed desired. Price on application.

Extra Cutters for Daniels Planer.....per dozen, \$5.00

## WOOD WORKING MACHINERY.

Planing, Tongueing and Grooving Machines, Flooring Machines, Surface Planers, Box Board Planers, Surface or Pony Planers, Buzz Planers, Molding Machines, Tenoning Machines, Mortising Machines, Re-Sawing Machines, Sawing Machinery of all kinds, and Boring Machines.

Separate catalogue of above machinery and special prices furnished on application.

## MACHINE KNIVES.



Fig. 1282.



Fig. 1283.



Fig. 1284.

Planing and Molding Machine Knives; Matcher Bits; Mitre Knives; Panel Raising, Jointing and Tenoning Knives; Shingle, Veneer and Cheese Box Rim Knives; Wood Chipper Knives, for chipping wood for paper pulp and dye woods; Paper Trimming and Leather Splitting Knives.

I have about 2000 patterns from which to select, and can make any kind required upon receipt of paper pattern. Lay the knife (steel side) upon the paper, mark around to give the length and width of knife and position of slots, then turn the knife upon the end, and mark around to give the thickness and bevel, also send name of the builder of machine.

Prices quoted on receipt of drawings.

## IMPROVED UPRIGHT POWER AND HAND DRILLS.

## LEVER DRILL.

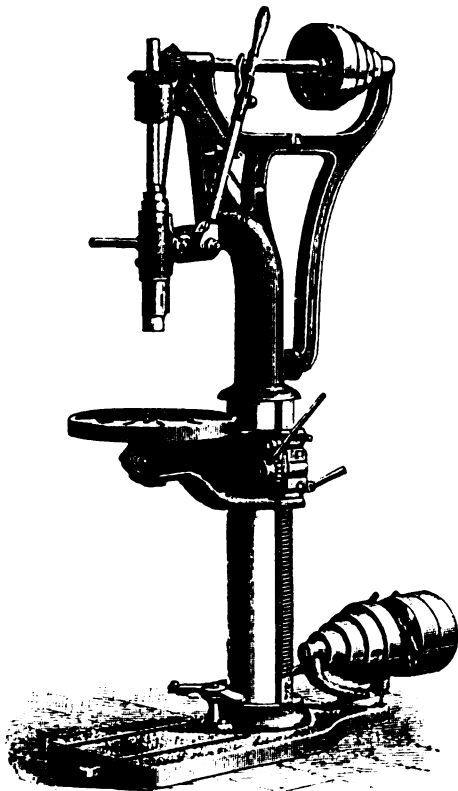
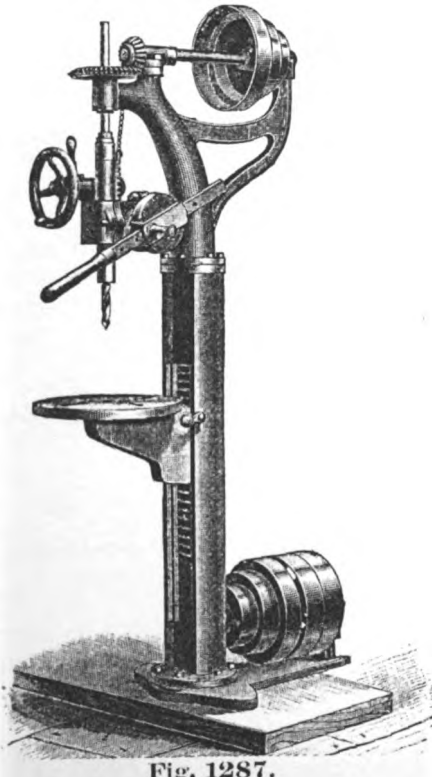
Fig. 1285.  
No. 10 DRILL.

Fig. 1287.

## Description, Figs. 1287 and 1288.

These Drills have 18½ inches swing. Traverse of spindle, 6 inches. Traverse of table, 20 inches. Greatest distance between spindle and table, 31 inches. Countershaft pulley, 21½x10 inches. Table, 15 inches.

## Price, No. 10 Drill, Fig. 1287.

Plain, with lever feed only.....\$100.00  
Hand Wheel and Worm Gear .....extra, 15.00  
Wheel Attachment for holding wheels " 7.50

## Price, No. 20 Drill, Fig. 1288.

Complete with taps and dies ½, ⅝, ¾, 1, 1½, 2, 2½ and 3 inch, vise and tap chuck, also 12 inch friction pulleys and countershaft..\$165.00

## Description Power Drills, Figs. 1285 and 1286.

These Drills have a revolving arm on which is attached a revolving table, all being raised or lowered by rack and pinion.

Steel spindle, with check nut to prevent back-lash or drop of spindle. Spindle is balanced by weight in post.

The arm and table can be swung out of the way and base of Drill used as a table for drilling large work.

## Prices.

Numbers and Description.	Swing, Inches.	Weight, Pounds.	Price, Each.
Lever Drill.....	20	600	\$125.00
" hand feed.....	20	600	134.00
No. 1 Drill, plain.....	20	800	190.00
" 1 " self-feed.....	20	850	225.00
" 1½ " plain.....	23	1200	240.00
" 1½ " self-feed.....	23	1250	275.00
" 1½ " back gears.....	23	1275	280.00
" 1½ " back gears and self-feed.....	23	1325	315.00
" 2 " plain.....	25	1575	255.00
" 2 " self-feed.....	25	1625	295.00
" 2 " back gears.....	25	1650	300.00
" 2 " back gears and self-feed.....	25	1700	340.00
" 2½ " plain.....	28	1875	280.00
" 2½ " self-feed.....	28	1925	320.00
" 2½ " back gears.....	28	1950	325.00
" 2½ " back gears and self-feed.....	28	2000	365.00

Larger sizes to order. Prices on application. All the above drills have patent quick return motion.

## No. 1 DRILL.

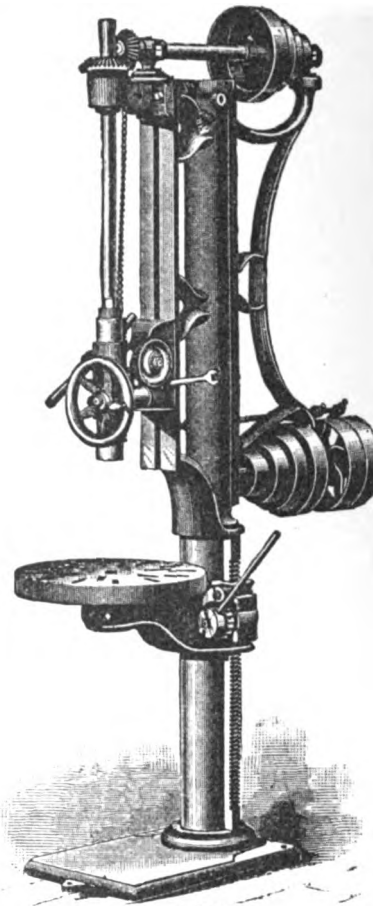


Fig. 1286.

## No. 7 DRILL.

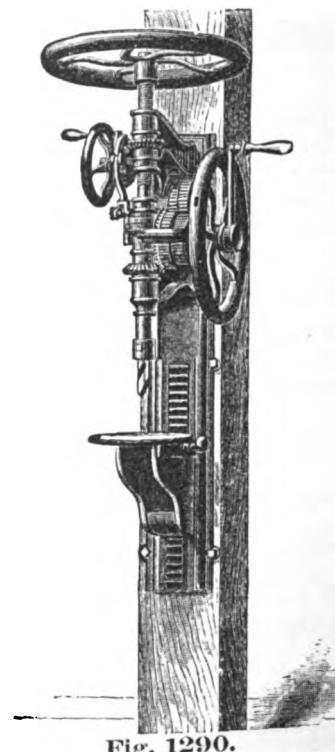


Fig. 1290.

## Description and Price, Fig. 1290.

No. 7. Drills to center of 20 inch circle and will drill as large as 1½ inches. Weight, 250 pounds. This drill is speeded for small work when crank is applied as shown in cut. For heavy work and for screw cutting, the crank is placed in the wheel at the side of the machine, which multiplies the power nearly three times. Can be fitted with pulley for power when desired.

No. 7 Drill complete.....\$70.00  
Wheel Holding Attachment.....extra, 7.50  
Screw Cutting Attachment with taps and dies ½, ⅝, ¾, 1, 1½, 2, 2½ and 3 inch, vise and tap chuck complete.....extra, 40.00  
Pulley for power....." 7.50  
Countershaft....." 12.00

## No. 20 DRILL.

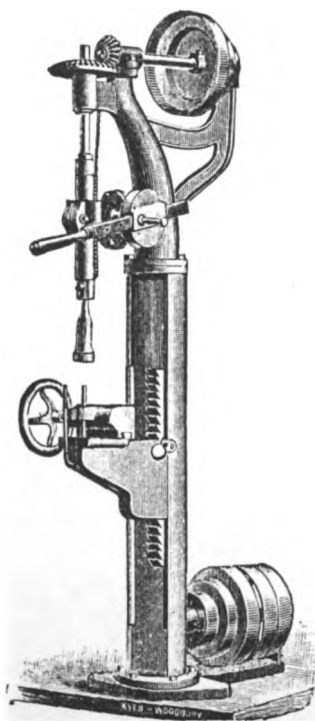


Fig. 1288.

## Nos. 5 and 6 DRILLS.

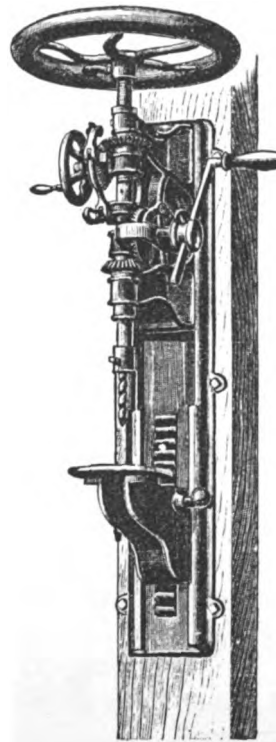


Fig. 1289.

## Description and Prices, Fig. 1289.

No. 5. Drills to center of 15 inch circle and will drill as large as ¾ inch. Drill Bits should have ½ inch shank. Diameter of balance wheel, 19 inches. Weight, 130 pounds.

No. 5 Drill complete.....\$28.00  
Wheel Holding Attachment.....extra, 7.50

No. 6. Drills to center of 20 inch circle and will drill as large as 1 inch. Drill Bits should have ¾ inch shanks. Diameter of balance wheel, 22 inches. Weight, 200 pounds.

No. 6 Drill complete.....\$47.00  
Wheel Holding Attachment.....extra, 7.50  
Pulley for power....." 5.00  
Countershaft....." 12.00

# UPRIGHT SELF-FEEDING DRILLS.

No. 32 DRILL.

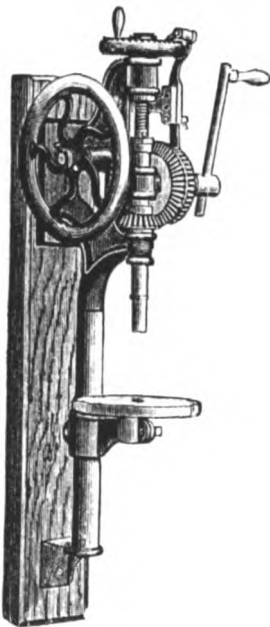


Fig. 1201.

This Drill is fitted for small drill chuck for holding wire drills, or can be used without chuck. Drills from 0 to 3/4 inch hole. Length, 26 inches. Weight, 30 pounds.

Each ..... \$20.00

No. 35 DRILL.

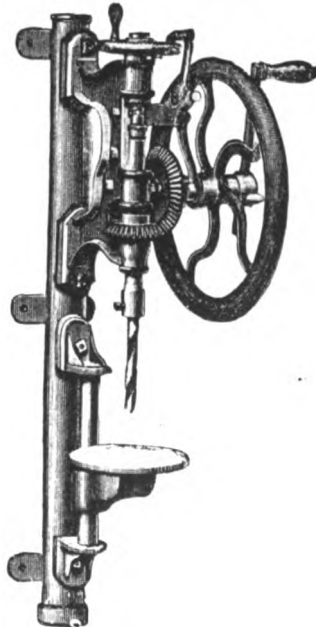


Fig. 1202.

This Drill is mounted on tubular iron column. Spindle takes 1/2 inch shank drill. Drills to center of 10 inch circle. Drills from 0 to 1 inch hole. Length, 42 inches. Weight, 111 pounds.

Each ..... \$30.00

No. 36 DRILL.

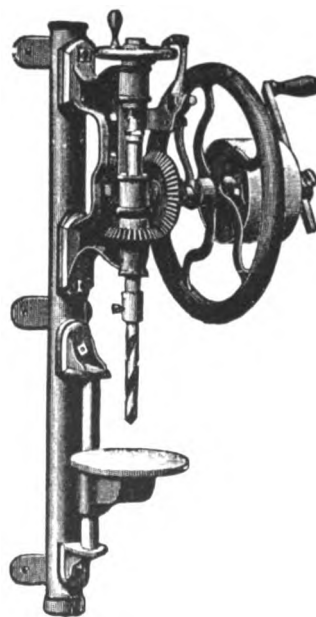


Fig. 1203.

This Drill is the same as No. 35, but is arranged for both hand and power. Pulleys, 7x2 inches. Speed at about 180 turns per minute for ordinary work. Length, 42 inches. Weight, 125 pounds.

Each ..... \$33.00

No. 33 DRILL.

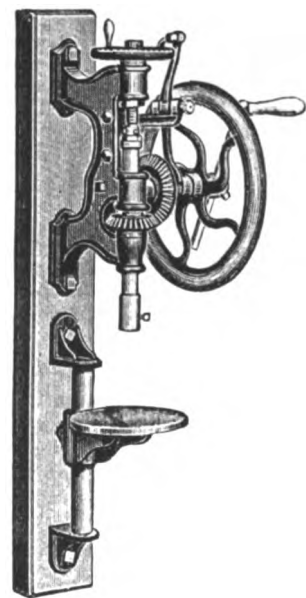


Fig. 1204.

Spindle of above Drill takes 1/2 inch straight shank drills. Furnished with pulleys for power when so ordered. Drills from 0 to 1 inch hole. Length, 42 inches. Weight, 98 pounds. For hand ..... each, \$28.00 For power, with pulleys ..... " 31.00

No. 41 DRILL.

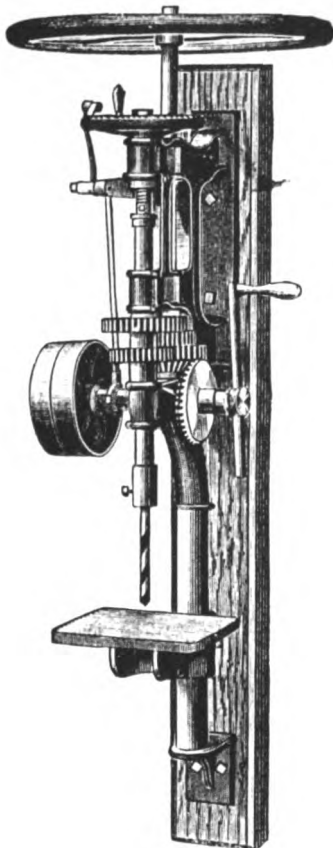


Fig. 1205.

The above machine has cut gears so arranged that quick or slow motion is given to spindle, as light or heavy work may require, and is a desirable tool for machine shop or factory. Drills to center of 19 inch circle. Spindle takes drills 11/64 inch shank. Can be used as hand and power, or either, independently. Pulleys 10x2 1/2 inches. Drills from 0 to 1 1/2 inch hole. Length, 65 inches. Weight, 250 pounds.

With pulleys ..... each, \$79.00 Without pulleys ..... " 75.00

No. 39 DRILL.

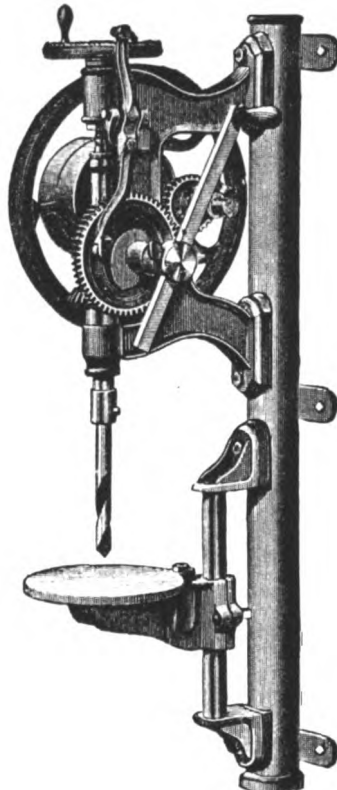


Fig. 1206.

The above Drill is mounted on tubular iron column, and is arranged for both hand and power. It is especially recommended for use on repairs in factories, agricultural works, machine shops, etc. Has automatic feed. Drills to center of 15 inch circle. Spindle bored for 1/2 inch shank drill. Pulleys 8x2 1/2 inches. Speed of pulley shaft about 375 turns per minute. Drills from 0 to 1 1/2 inch hole. Length of column, 51 inches. Weight, 200 pounds.

With pulleys ..... each, \$56.00 Without pulleys ..... " 52.00

No. 38 DRILL.

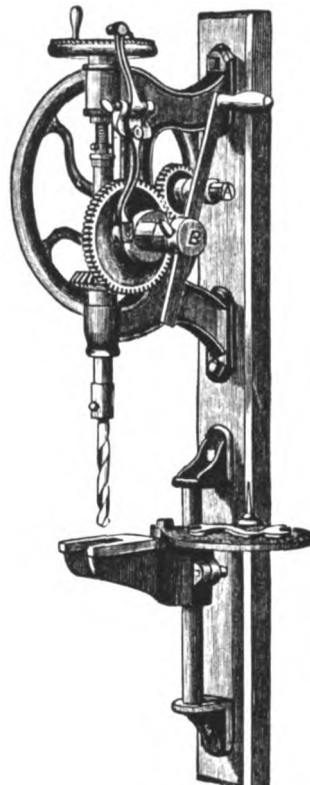


Fig. 1207.

This Drill has all the late improvements. The swing table as applied to the machine will be found useful in many ways, and is more convenient than the old method of driving them out with a hammer. It is out of the way when not in use, and can be quickly put in position. Drills to center of 15 inch circle. Spindle bored to take 1/2 inch shank drills. When ordered for power attachment, pulleys are fitted for outer end of shaft A. Drills from 0 to 1 1/2 inch hole. Length, 51 inches. Weight, 160 pounds.

Drill complete, as per cut ..... each, \$48.00 With pulleys ..... " 52.00

No. 40 DRILL.

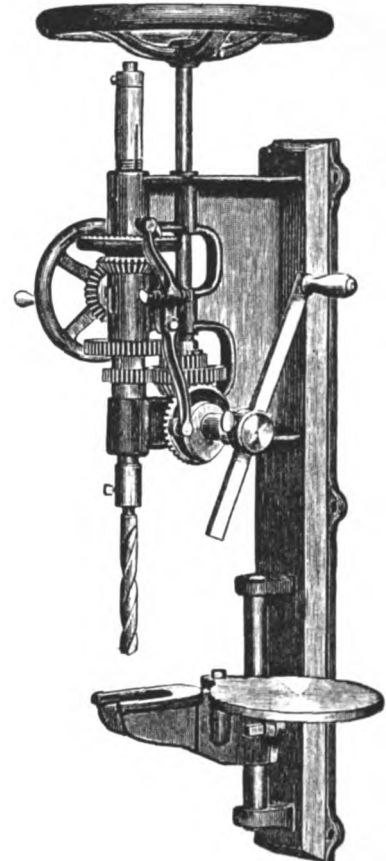


Fig. 1208.

The above Drill has turned and accurately cut spur gears, arranged to slide on shaft for fast or slow motion. Frame is cast in one piece. Has the latest improvements. Drills to center of 15 inch circle. Spindle fitted to 11/64 inch, straight shank drills. Drills from 0 to 1 1/2 inch hole. Length, 51 inches. Weight, 190 lbs.

Each ..... \$70.00

## UPRIGHT AND HORIZONTAL DRILLS.

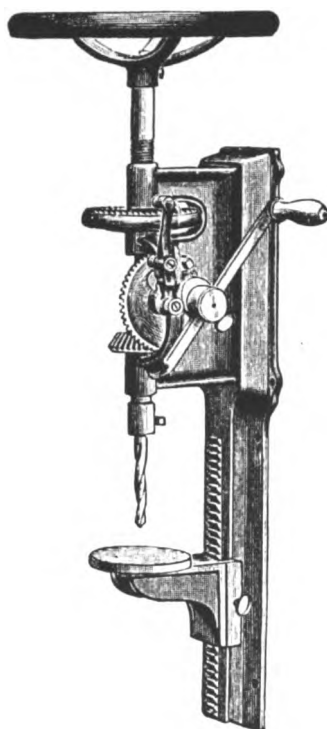
No. 34 DRILL.  
Self-Feeding.

Fig. 1299.

The frame of above machine is cast in one piece. Can be used horizontally if desired. Drills to center of 11 inch circle. Spindle takes  $\frac{1}{2}$  inch shank drill. Drills from 0 to  $\frac{3}{4}$  inch hole.

Length, 44 inches. Weight, 110 lbs.  
Each.....\$25.00

No. 42 HORIZONTAL DRILL, AUTOMATIC FEED.

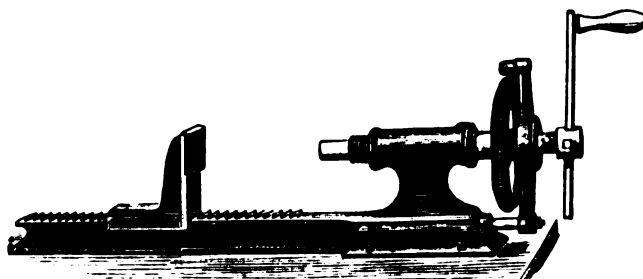


Fig. 1300.

Spindle takes  $\frac{1}{2}$  inch round shank drills. Has three changes of automatic feed. Length 33 inches. Weight, 45 lbs.

No. 42, Without balance wheel as shown in cut .....\$10.00  
No. 52, With balance wheel in place of crank ..... 13.00  
No. 62, With balance wheel, length 44 inches, weight 115 lbs ..... 20.00

No. 43 HORIZONTAL DRILL.

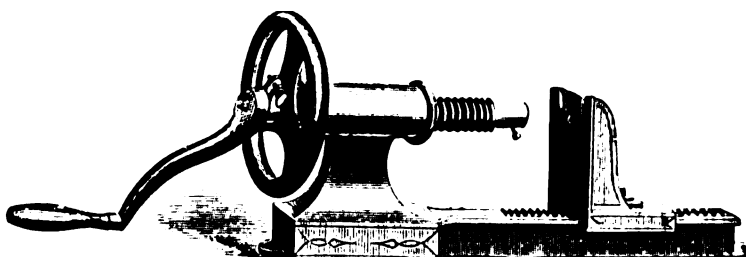


Fig. 1301.

Spindle bored for  $\frac{1}{2}$  inch round shank drills. Drill fed to work by friction feed. Length, 26 inches. Weight, 33 lbs.

No. 43, With friction feed .....\$6.75  
No. 53, Without friction feed ..... 6.00  
No. 63, Without friction feed, light pattern ..... 5.00

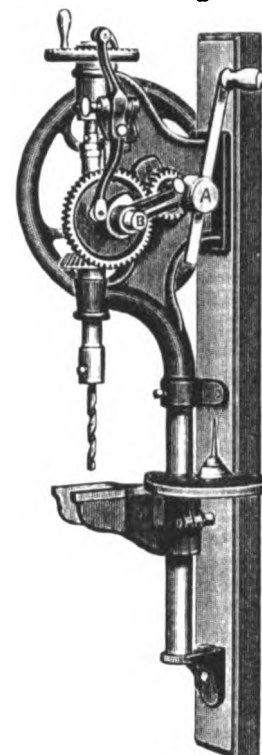
No. 37 DRILL.  
Self-Feeding.

Fig. 1302.

On above machine a fast or slow speed is given to spindle by changing handle from A to B. Drills to center of 10 inch circle. Spindle bored for  $\frac{1}{2}$  inch shank drills. Drills from 0 to  $\frac{1}{4}$  inch hole. Length, 44 inches. Weight, 120 lbs.  
For hand ..... each, \$31.00  
For power, with pulleys ..... 37.00

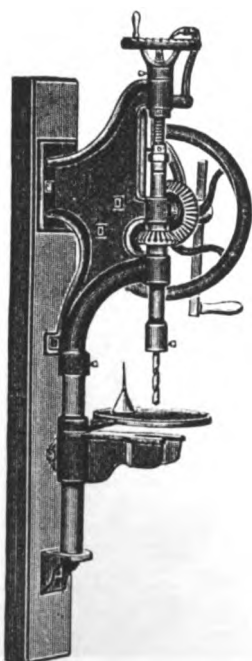
No. 46 DRILL.  
Self-Feeding.

Fig. 1303.

No. 46 Drill has feed motion which can be adjusted to four rates of speed. It has swing table and a grinding attachment which is brought into use by tightening a thumb screw, and provides a rest for grinding the drill bit correctly. Drill socket screws on to the spindle, and has  $\frac{1}{2}$  inch hole for drill. It can be taken off and a steel chuck can be put on in its place at extra cost for chuck of \$3.00 net. Drills to center of 10 inch circle. Drills from  $\frac{1}{8}$  to 1 inch hole. Length, 48 inches. Weight, 115 lbs.

Drill, complete with grinder ..... each, \$28.00  
" without grinder ..... " 25.00

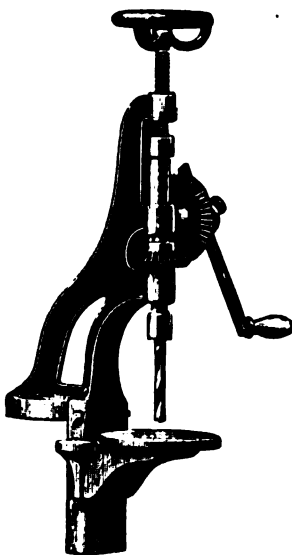
No. 30 DRILL.  
For Bench.

Fig. 1304.

Drills  $\frac{1}{8}$  to  $\frac{3}{4}$  inch hole. Length, 33 inches. Weight, 55 lbs.  
Each.....\$12.00

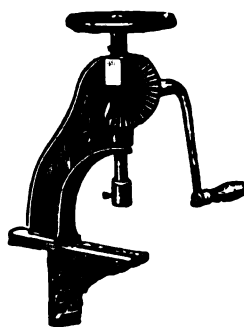
No. 45 DRILL.  
For Bench.

Fig. 1305.

This machine is single geared and compact in construction. Vertical motion,  $2\frac{1}{2}$  inches. Swings 10 inches.

Each.....\$12.00

## Description Bench Drills.

Figs. 1304 and 1306.

Spindles bored for  $\frac{1}{2}$  inch straight shank drill. Have hand feed. Drills hole in center of 10 inch circle. Tables have four adjustments for position.

Drill, complete with grinder ..... each, \$38.00  
" without grinder ..... " 35.00

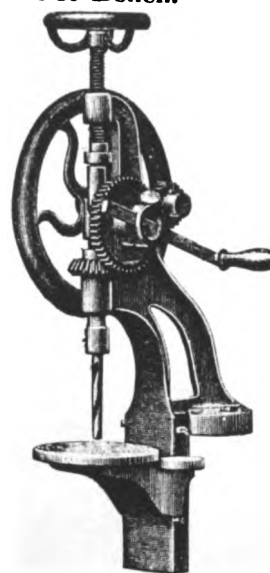
No. 31 DRILL.  
For Bench.

Fig. 1306.

Drills  $\frac{1}{8}$  to 1 inch hole. Length, 33 inches. Weight, 75 lbs.  
Each.....\$15.00

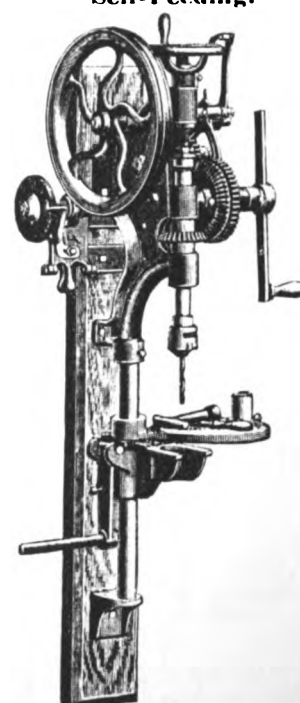
No. 47 DRILL.  
Self-Feeding.

Fig. 1307.

No. 47 Drill is built on the same principle as No. 46. It is made heavier and stronger, and is designed for heavier work. It has all the improvements of both Nos. 46 and 47, and for the carriage shop is unequalled. Furnished for power if desired. Chuck in place of drill socket extra, \$3.50. Drill socket has  $\frac{5}{8}$  inch hole for drill. Drills to center of 15 inch circle. Drills from  $\frac{1}{8}$  to  $1\frac{1}{2}$  inch hole. Length, 65 inches. Weight, 200 lbs.

Drill, complete with grinder ..... each, \$48.00  
" without grinder ..... " 45.00  
Pulleys and Countershaft for power ..... extra, 15.00



## PATENT PORTABLE DRILL.

## Description.

This machine can be placed as easily as a ratchet brace, and will drill at any angle, in any position, at any distance, and in any direction from the power. It is especially adapted to drilling all pieces which are inconvenient to move, or which cannot be readily adjusted under stationary drilling machines.

The accompanying cut represents a No. 4 Drill with counter-hanger, showing the manner in which the power is applied to this machine.

The counter-hanger, being bolted to the ceiling or other convenient place, receives power from the "line shaft" by a flat belt on the fast and loose pulleys. The frame carrying the "idlers" rotates on a hollow stud, through which the round belt passes to the grooved driving pulley. The rotation of this frame permits the belt to be led to the drilling machine in any direction, radially, from the hanger, while the rise and fall of the weighted "idler" permits it to be led to any point within the scope of this rise and fall—say ten to fifteen feet or more. By inserting sections of belt by means of the hook couplings any distance can be reached.

Round raw-hide belt is preferable to any other on account of its flexibility, strength and durability, and will prove the cheapest in the end, although any kind of round belting or rope can be used.

The base of the drilling machine is intended to be bolted or clamped to the piece to be drilled. The height of the post can be adjusted to suit the different lengths of drills and chucks used in the spindle.

The radial arm is adjustable in direction of its length, and can be rotated about the post, thus any point within the circle having the arm for its radius can be reached without moving the machine.

When the drilling machine is not being used on the floor, it serves the purpose of a bench drill press.

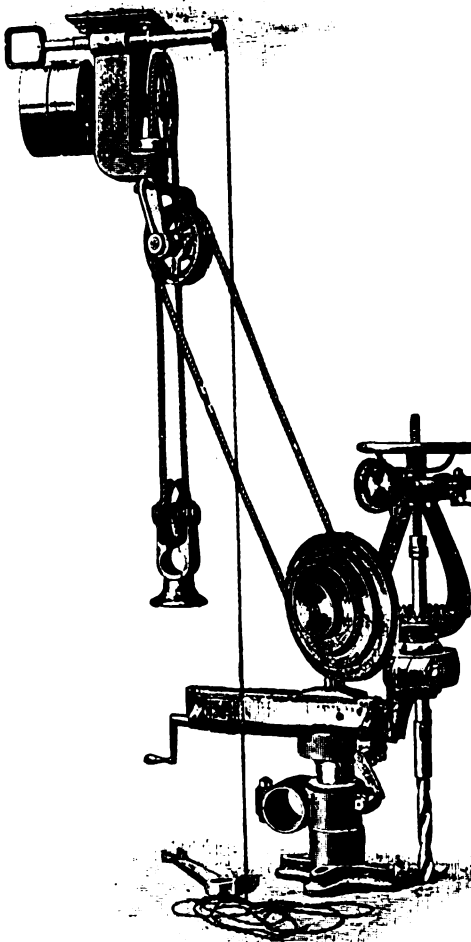


Fig. 1308.

## Capacity and Weight.

Nos.	Will Drill up to a diam. of	Greatest Distance from Spindle to Center of Post.	Vertical Adjustment of Post.	Traverse of Spindle.	Morse Taper Socket in Spindle.
A	3/4 in.	12 ins.	5 ins.	4 ins.	No. 2
B	1 "	16 1/2 "	5 "	5 1/2 "	" 3
1	1 "	16 1/2 "	5 "	5 1/2 "	" 3
2	1 1/2 "	21 1/2 "	6 "	5 1/2 "	" 4
3	2 "	21 1/2 "	6 "	8 "	" 4
4	3 "	28 "	6 "	13 "	" 4

Nos.	Speed of Counter-shaft.	Diameter of Tight and Loose Pulleys.	Width of Belt.	Weight of Machine.	Weight Complete, Boxed.
A	200 rev.	9 ins.	2 1/2 ins.	75 lbs.	225 lbs.
B	200 "	9 "	2 1/2 "	110 "	250 "
1	200 "	10 "	3 "	130 "	300 "
2	200 "	10 "	3 "	240 "	500 "
3	200 "	10 "	3 "	280 "	550 "
4	200 "	10 "	3 "	400 "	700 "

## Sizes of Suitable Rope and Couplings.

No. of Drill.	A	B	1	2	3	4
Size Rope, inches..	1 1/2	1 1/2	1 1/2	5/8	5/8	5/8

## Prices.

Nos.	Price Drilling Machine, Only.	Price Counter-hanger, Only.	Complete with 100 feet Hemp or Cotton Rope and 3 pairs Couplings.	Complete with 100 feet Raw-hide Rope and 3 pairs Couplings.
A	\$60.00	\$30.00	\$95.00	\$115.00
B	85.00	30.00	120.00	140.00
1	130.00	35.00	170.00	190.00
2	165.00	35.00	207.00	230.00
3	195.00	35.00	237.00	260.00
4	265.00	35.00	307.00	330.00

## IMPROVED ANGULAR HAND DRILLS.

## No. 1 DRILL.

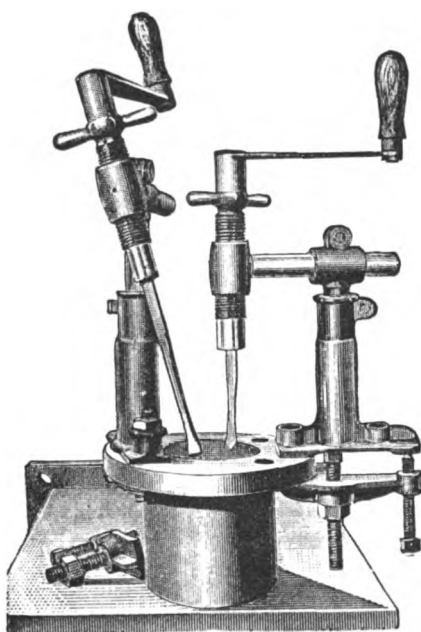


Fig. 1309.

## Nos. 2, 3 and 4 DRILLS.

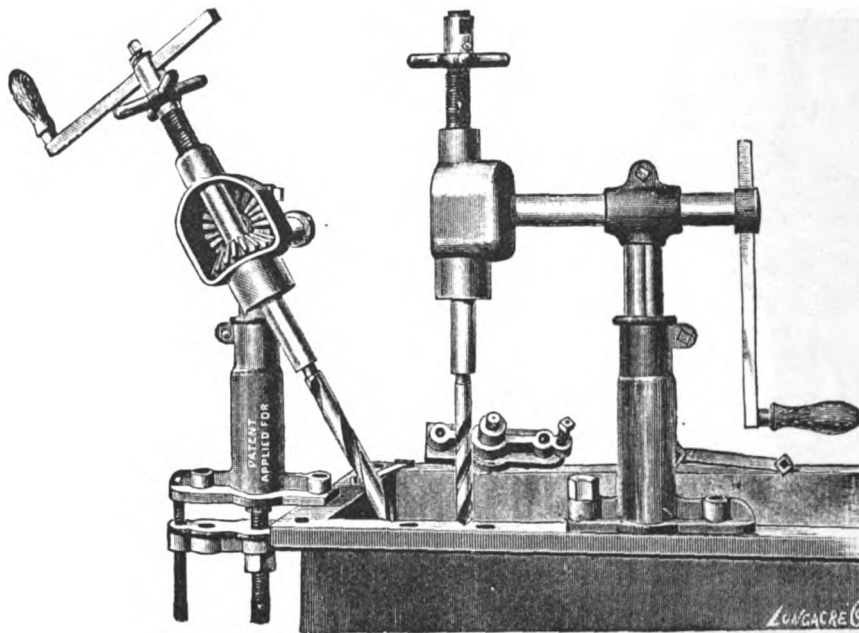


Fig. 1310.

These Drills being made entirely of cast steel, are light but very strong. The shape of parts and distribution of metal is such as to insure a maximum of strength and stiffness. They are very convenient to set and adjust. When the bottom clamp and stud are used they can be fastened to a bench or the flange of a casting; with the clamp and stud removed, they can be bolted to any flat surface. The post and arm are round and held in split bearings, this allowing the drill to be placed in any position and at any angle. In the Nos. 2, 3 and 4 the crank handle is adjustable in length to suit the size of hole being drilled, and can be used either at end of the arm or at end of the spindle.

Nos.	Will Drill up to a Diameter of	Greatest Distance from Spindle to center of Post.	Vertical Adjustment of Post.	Spindle Traverse.	Socket in Spindle.	Weight of Drill.	Weight Boxed.	Price of Drill.
1	1 1/2 inch.	6 1/2 inches.	4 inches.	2 1/2 inches.	Square.	11 lbs.	20 lbs.	\$16.00
2	7/8 "	9 1/2 "	5 "	3 1/2 "	No. 2 Morse.	38 "	50 "	32.00
3	1 1/4 "	12 "	5 "	4 "	" 3 "	65 "	90 "	50.00
4	2 "	14 1/2 "	6 "	4 1/2 "	" 4 "	90 "	120 "	80.00

## COMBINATION DRILLS AND VISES.

## VISE AND DRILL

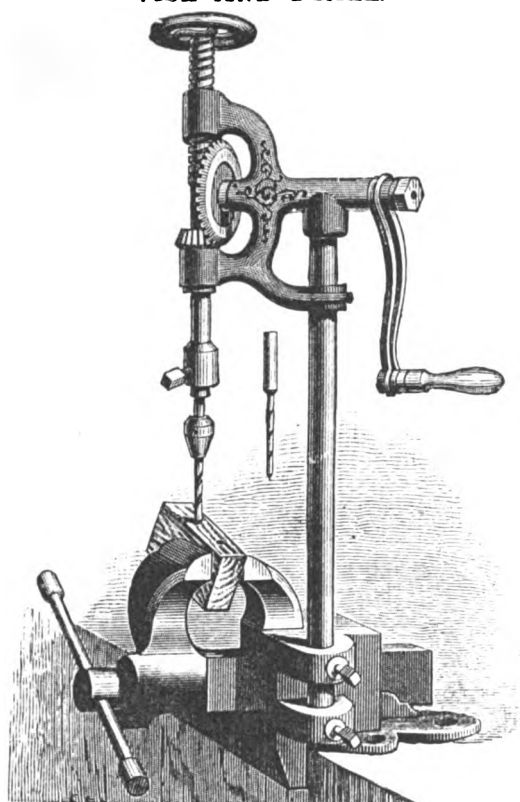


Fig. 1311.

Vise and Drill, weight 61 lbs. .... \$15.00  
Vise only, weight 41 lbs. .... 7.00

## BREAST AND UPRIGHT LEVER DRILL.

## ANVIL, VISE AND DRILL.

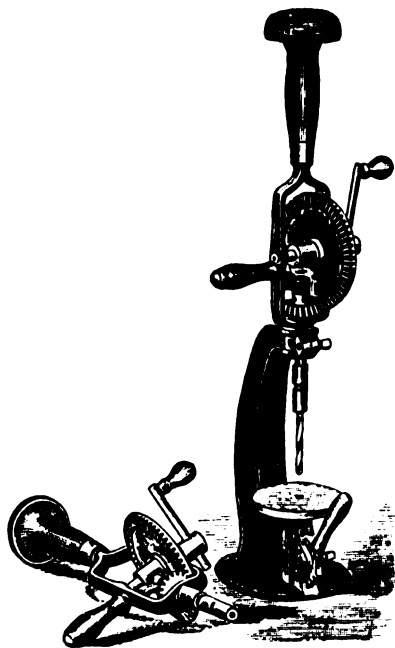


Fig. 1312.

Spindle is of steel; has hole for  $\frac{1}{4}$  inch shank drills. End of spindle is tapered to fit small chucks for wire drills. Length from base to top of handle, 25  $\frac{1}{2}$  inches.

Breast Drill only. .... \$4.00  
Stand with raise and fall table. .... 4.00

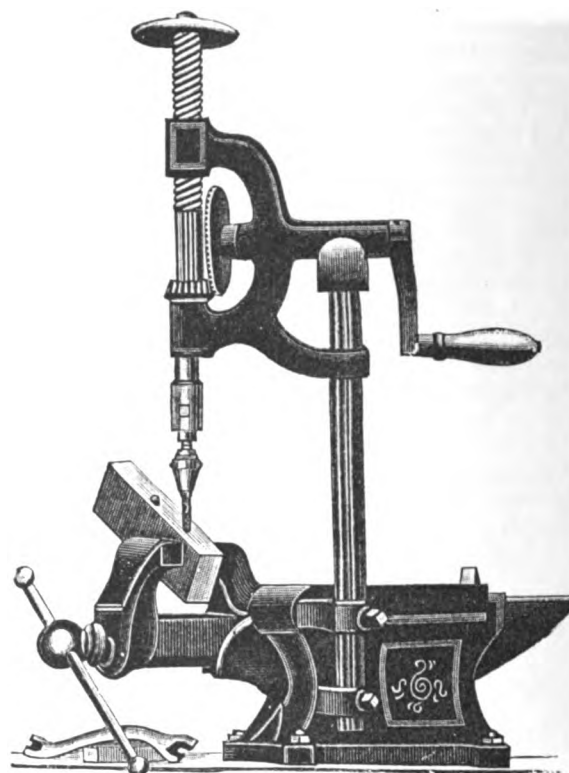


Fig. 1313.

Anvil, Vise and Drill, weight 80 lbs. .... \$18.00  
Anvil and Vise, weight 60 lbs. .... 10.00  
Drill only, weight 20 lbs. .... 8.00

## BREAST DRILLS.

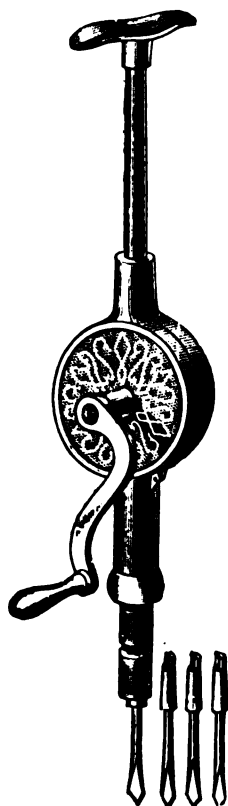


Fig. 1314.  
Complete with 4 Drills.  
Each ..... \$4.00

## No. 4 HAND DRILL.

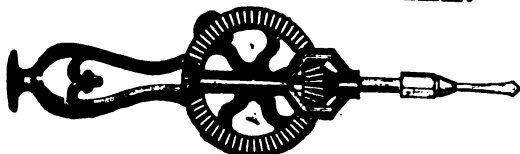


Fig. 1319.

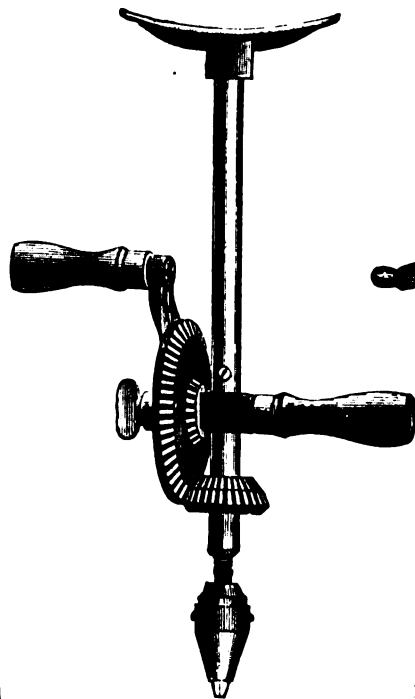


Fig. 1315.

Wrought Stock, Nickel Plated.  
No. 10, with chuck to hold any shaped tools ..... \$3.00  
No. 11, " " drills 1-32 to 1-1 inch only ..... 3.00  
These Drills have changeable gears, one even and the other speeded three to one. The change from one to the other can be made in one second. Prices do not include drills.

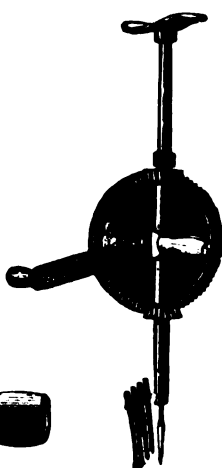


Fig. 1316.

Wrought Stock.  
No. 1, Double Geared, with 4 Drills ..... \$1.00  
No. 2, Single Geared, with 4 Drills ..... \$2.50  
Cast Stock.  
No. 3, Single Geared, with 4 Drills ..... \$2.25

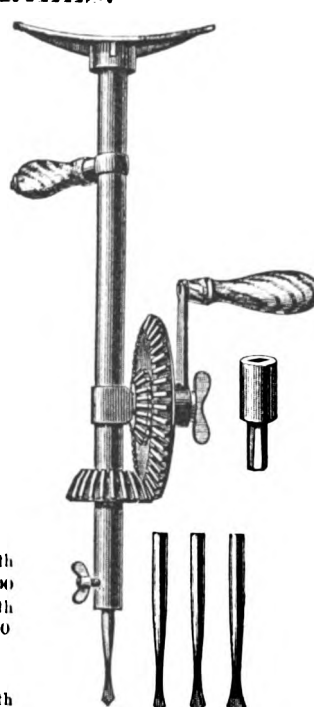


Fig. 1317.

Wrought Stock.  
Double geared for slow and fast speed. Complete, with 4 drills and extra socket for square shank drills or tools.  
Each ..... \$3.00

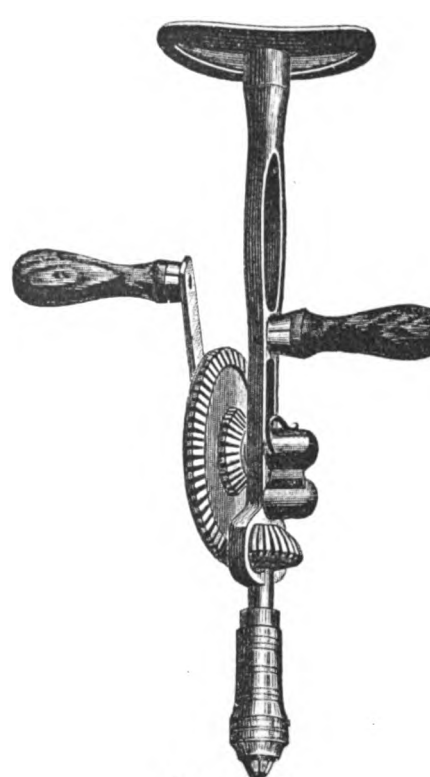


Fig. 1318.

Malleable stock, changeable gears, one even and the other three to one. With Barber Chuck to hold tools of all shapes and sizes.  
Each ..... \$3.00

## No. 1B HAND DRILL.

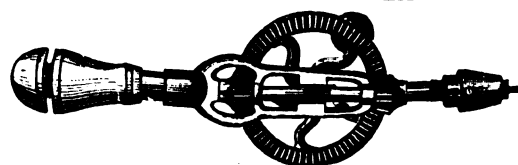


Fig. 1320.

Price, Fig. 1319.  
No. 4 Hand Drill. Length, 8 inches. Weight, 8 ounces. Complete, with 6 superior drill points, assorted sizes. .... \$0.50

Prices, Fig. 1320.  
No. 1B Hand Drill, nickel plated, double geared, hollow handle ..... \$1.50  
No. 1 Hand Drill, nickel plated, single geared, hollow handle ..... \$1.25

# RATCHET AND CRANK DRILL.

Continuous Motion.

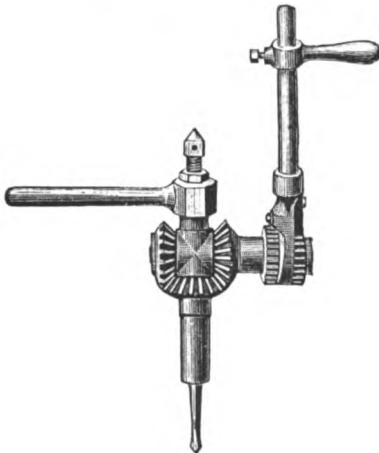


Fig. 1321.

# RATCHET DRILLS AND DRILL POST.

Continuous Motion Ratchet and Crank Drill, Fig. 1321.

In this improved drill are combined the following movements. The continuous forward movement of the drill spindle, caused by the reciprocating movement of the operating lever; also the single acting movement as found in the ordinary ratchet drill. It can also be used as a crank drill by slipping the handle on the lever, making it very convenient for drilling small holes where there is room for a complete revolution of the crank.

No. 1. 10 inch handle.....each, \$13.00 No. 2. 12 inch handle.....each, \$16.00

Wrought Iron Drilling Post, Fig. 1322.

This is a very handy article for use in connection with ratchet drills. It is made of wrought iron, the post is turned for the swinging arm, the foot is planed square and has a slot in its full length for bolting down.

Nos.	Heights of Post.	Radius of Arm.	Price, Each.
1	20 inches.	10 inches.	\$8.00
2	26 "	12 "	10.00

# DRILLING POST.

For use with Ratchet Drills.

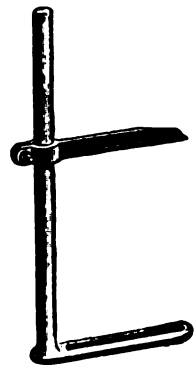


Fig. 1322.

# DOUBLE ACTING RATCHET DRILL.

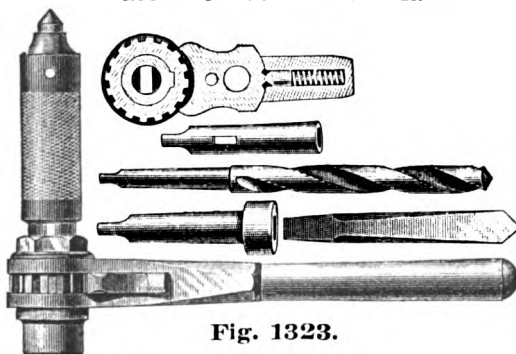


Fig. 1323.

- No. 1. 10 $\frac{3}{4}$  inch handle, with one socket taking Morse taper shank drills, from  $\frac{1}{4}$  to  $\frac{3}{8}$  inch inclusive, and one socket taking flat drills.....\$14.00  
 No. 1. Without the two sockets as above... 11.00  
 No. 2. 13 $\frac{3}{4}$  inch handle, with one socket taking Morse taper shank drills, from  $\frac{1}{4}$  to  $\frac{1}{2}$  inches inclusive, and one socket taking flat drills..... 17.00  
 No. 2. Without the two sockets as above.... 14.00

# Prices, Sockets Only.

- No. 1. For Taper Shank Drills,  $\frac{1}{4}$  to  $\frac{3}{8}$  in....\$1.50  
 " 2. " " "  $\frac{1}{4}$  to  $\frac{1}{2}$  ".... 2.00  
 " 3. For Flat Drill for No. 1 Ratchet..... 1.75  
 " 4. " " " 2 "..... 1.75

Socket No. 1 is fitted with taper shank to slide into No. 2 Socket, and mechanics procuring No. 2 Ratchet with the three sockets can use the whole list of drills.

# SMITH'S IMPROVED RATCHET DRILLS.

Boiler Ratchet.

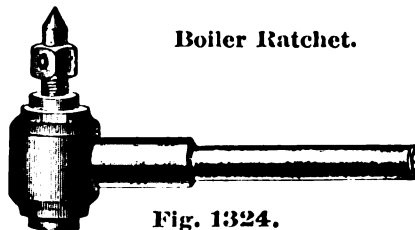


Fig. 1324.

- No. 1. 12 inch handle.....each, \$8.75  
 " 2. 15 " "..... " 11.00

Extra Short Stock.



Fig. 1325.

Regular Ratchet.

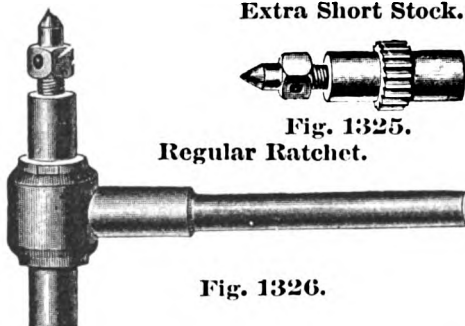


Fig. 1326.

The Extra Short Stock can be readily substituted in place of the long one, thus making it a boiler ratchet.

- No. 1. 12 inch handle.....each, \$10.00  
 " 2. 15 " "..... " 12.00  
 " 3. 18 " "..... " 14.50  
 Extra Short Stocks for Nos. 1 or 2... " 5.00

# RENSHAW'S IMPROVED RATCHET DRILL.

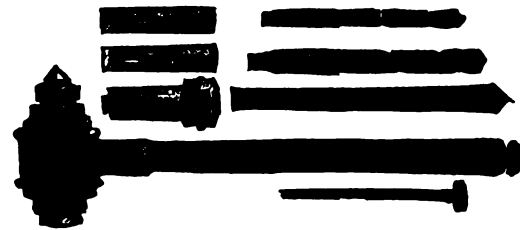


Fig. 1327.

The handle, 15 inches long, is drop-forged of tough wrought iron. The spindle, of steel, has substantial ratchet teeth cut in its periphery engaging with a pawl lodged in the handle, which covers both pawl and ratchet and protects them from dirt.

By transferring the collet and feed screw, as arranged for right-hand drilling, to opposite ends of spindle, the ratchet may be used for left-hand drilling.

It has one collet, No. 5, for square shank drills,  $\frac{1}{2}$  to  $1\frac{1}{2}$  inches, which are the extreme sizes that this ratchet is adapted to carry. Collets Nos. 1, 2 and 3 are for Morse's standard taper shanks. Nos. 3 and 5 collets are held in spindle by screw thread. Nos. 1 and 2 collets have taper shanks, fitting No. 3 socket.

Drill complete, with four collets.....\$20.00

Deductions will be made for collets when not wanted, as follows:

- Nos. 1 and 2.....each, \$1.20  
 " 3 " 5..... " 1.75

# PACKER RATCHET DRILLS.

Regular Ratchet.

For General Use.

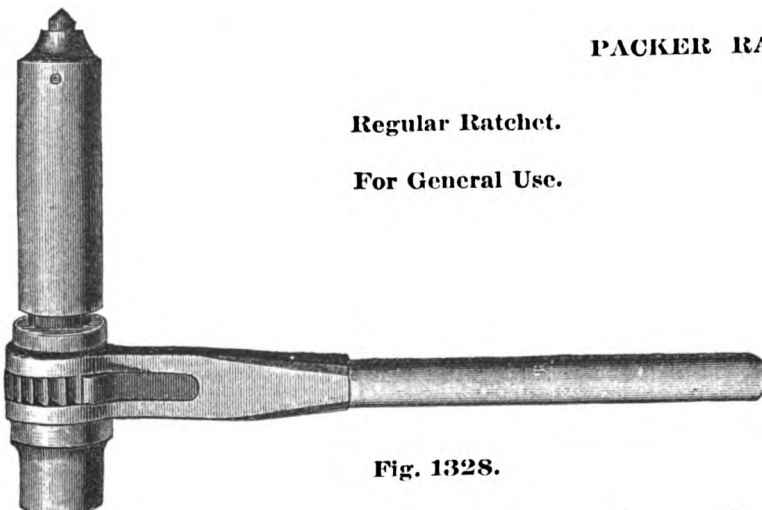


Fig. 1328.

Numbers	1	2	3	4	5
Length of Handle, inches	10	12	15	17	20
Price, each	\$10.50	13.50	16.00	19.00	23.00

Special prices will be quoted for Packer Ratchets fitted with sockets for Morse Taper Shank Drills.

Boiler Makers' Ratchet.

Short Stock.

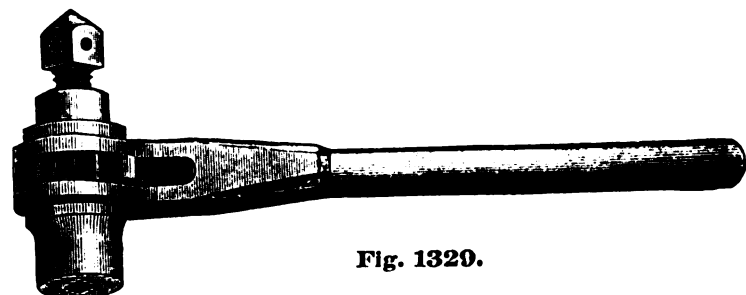
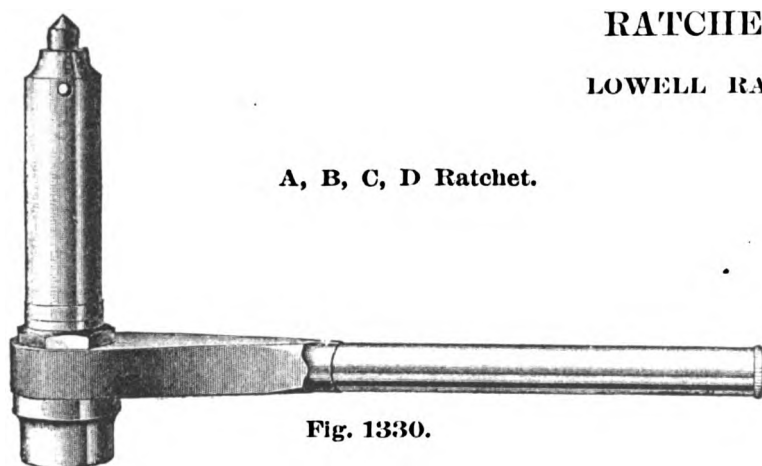


Fig. 1320.

Numbers	1	2
Length of Handle, inches	10	12
Price, each	\$9.00	10.50

## RATCHET DRILLS.

## LOWELL RATCHET DRILLS.



A, B, C, D Ratchet.

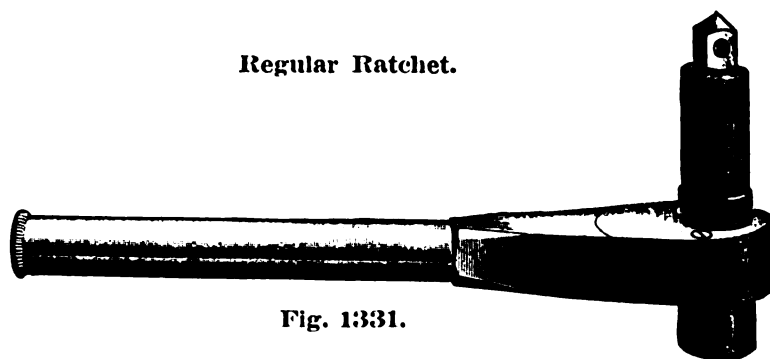
Fig. 1330.

In this tool the ratchet wheel is small as compared with that in similar tools, allowing the ratchet to be used in very close places. It is warranted in every part and particular.

## Prices, A, B, C, D Ratchets.

Fig. 1330.

Nos	A	B	C	D
Handles, inches	10	12	15	18
Each	\$7.00	9.00	11.00	14.00



Regular Ratchet.

Fig. 1331.

This Drill may be converted into a wrench by removing the cap and changing the drill socket for a wrench gear of corresponding number. See page 173 for prices of wrench gear fitting this handle.

## Prices, Boiler Makers' Ratchets.

Fig. 1331.

Nos	1	2	3
Handles, inches	10	12	15
Each	\$6.00	8.00	10.00

## Prices, Regular Ratchets.

Fig. 1331.

Nos	1	2	3	4
Handles, inches	10	12	15	18
Each	\$6.00	8.00	10.00	12.00

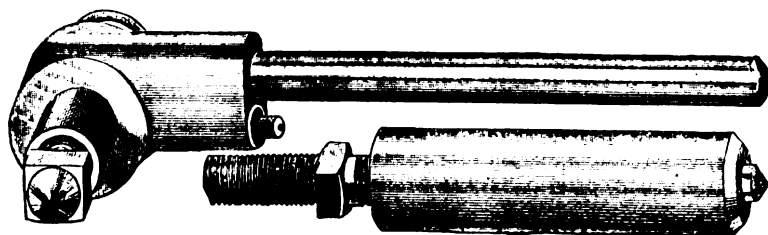
DOUBLE ACTING  
RATCHET DRILL.

Fig. 1332.

This Drill can be used as a boiler ratchet, where the space is small, and by changing screw it can be used as a common ratchet, and have longer run of feeding screw than has been heretofore obtained with the same length of stock. It is reversible, which is convenient in light drilling to turn shell on and not move drill, also in getting out broken bolts and studs as well as when using as a wrench. Each ratchet packed in a neat wood box.

Nos	0	1	2	3	4	5
Handles, inches	8	10	12	15	17	20
Weight, boxed, lbs.	21 $\frac{1}{2}$	71 $\frac{1}{2}$	12	151 $\frac{1}{2}$	18	20
Price, each	\$8.00	10.00	12.00	15.00	18.00	22.00

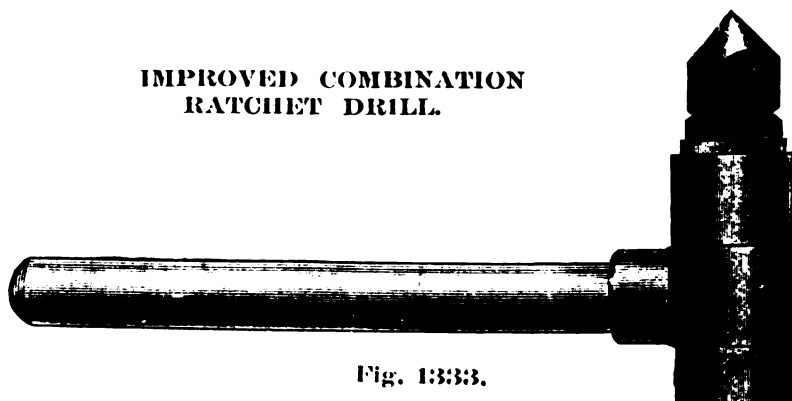
IMPROVED COMBINATION  
RATCHET DRILL.

Fig. 1333.

Above cut shows drill with regular short body, enabling it to be used in very small spaces. When wanted an extra sleeve is furnished with ratchet to be used when necessary to drill in large spaces.

Each Ratchet has about twenty teeth, all engaging at same time, rendering slipping or stripping of the teeth impossible. Made entirely of steel, case hardened.

Nos	1	2	3
Length Handles, inches	10	12	16
Length Bodies, "	3	4	5
Length Extra Sleeves, inches	3 $\frac{1}{2}$	4 $\frac{1}{2}$	5 $\frac{1}{2}$
Prices, Ratchets, each	\$7.00	10.00	12.00
Prices, Extra Sleeves, each	2.00	2.50	3.00

## WESTON'S DIFFERENTIAL RATCHET DRILLS.

## Regular Ratchet.

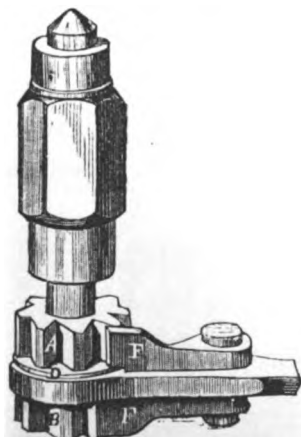


Fig. 1334.

## Angle Iron Ratchet.

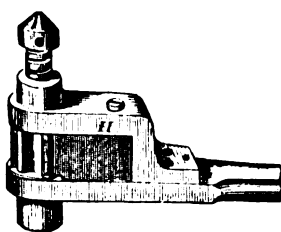


Fig. 1335.

Length of Lever, 12 inches.  
Will drill within  $\frac{1}{2}$  inch of the inner angle.

Each .....\$19.00

## Boiler Makers' Ratchet.

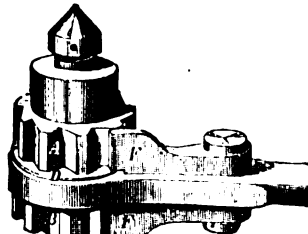


Fig. 1336.

Length of Lever, 14 inches.  
Space required, 31 $\frac{1}{2}$  inches. Will feed  $\frac{5}{8}$  inch.

Each .....\$8.00

## Swivel Handle Ratchet.

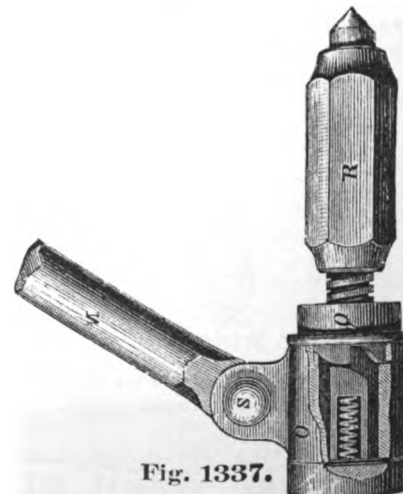


Fig. 1337.

## Prices, Fig. 1334.

Length of Lever.	Each.	Length of Lever	Each.
12 inches	\$7.60	18 inches	\$10.00
14 "	8.00	20 "	10.50
16 "	8.75	22 "	12.00

## Locomotive Ratchet.

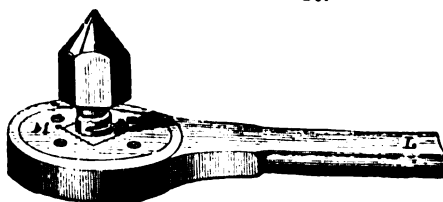


Fig. 1338.

## Price, Fig. 1338.

Length of Lever, 14 inches. Space required, 23 $\frac{1}{4}$  inches. Will feed  $\frac{5}{8}$  inches.  
Each .....\$12.00

## Price, Fig. 1337.

Length of Lever, 12 inches.  
Each .....\$10.00

# BIT BRACES AND BORING MACHINES.

## NEW HAVEN NOVELTY BRACE.

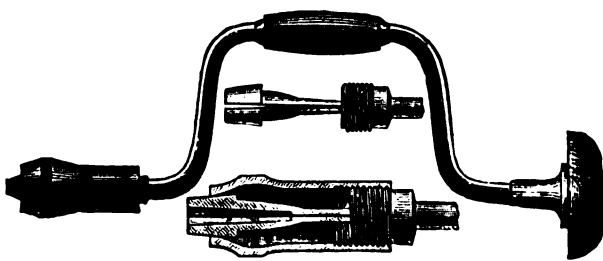


Fig. 1330.

BLACK WALNUT HEAD AND  
HANDLE—POLISHED.

No. 80, 14 in. sweep.	per doz.	\$24.00
" 81, 12 " "	" "	20.00
" 82, 10 " "	" "	18.00
" 83, 8 " "	" "	17.00

LIGNUM VITAE HEAD, ROSEWOOD  
HANDLE—NICKEL PLATED.

No. 90, 14 in. sweep.	per doz.	\$33.00
" 91, 12 " "	" "	30.00
" 92, 10 " "	" "	27.00
" 93, 8 " "	" "	24.00

The New Haven Bit Brace is constructed upon an entirely new principle. Its socket and grasping jaws are one solid piece of metal. Not a pin, spring or fastening to get misplaced or out of order. The jaws are wrought steel and tempered, and they will hold firmly a greater variety of bit shanks than any other adjustable brace made.

## NEW HAVEN RATCHET BRACE.

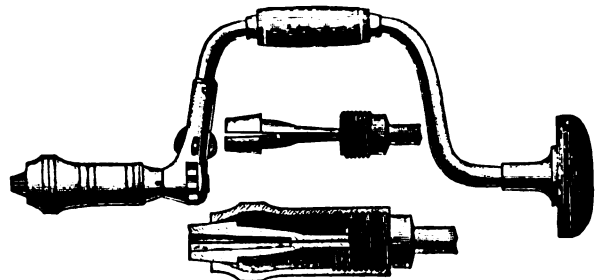


Fig. 1340.

This Ratchet Brace is unequalled for simplicity and adjustability.  
BLACK WALNUT HEAD AND  
HANDLE—POLISHED.

No. 120, 8 in. sweep.	per doz.	\$20.00
" 121, 10 " "	" "	23.00

LIGNUM VITAE HEAD, ROSEWOOD  
HANDLE—NICKEL PLATED.

No. 124, 8 in. sweep.	per doz.	\$30.00
" 125, 10 " "	" "	33.00
" 126, 12 " "	" "	36.00

## IMPROVED BARBER BRACE.

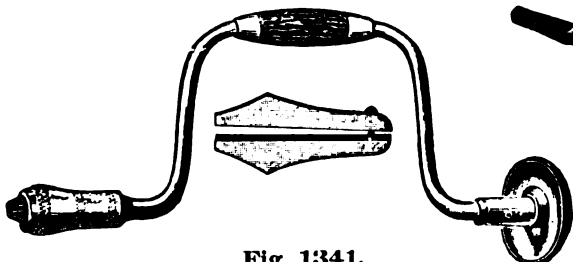


Fig. 1341.

BLACK WALNUT HEAD AND  
HANDLE—POLISHED.

No. 21, 12 in. sweep.	per doz.	\$12.00
" 22, 10 " "	" "	11.00
" 23, 8 " "	" "	10.00

LIGNUM VITAE HEAD, ROSEWOOD  
HANDLE—NICKEL PLATED.

No. 10, 14 in. sweep.	per doz.	\$33.00
" 11, 12 " "	" "	30.00
" 12, 10 " "	" "	27.00
" 13, 8 " "	" "	24.00

## UNIVERSAL ANGULAR BIT STOCK.



Fig. 1342.

Price, per dozen.....\$24.00

## RATCHET BRACE WITH IMPROVED BARBER JAWS.

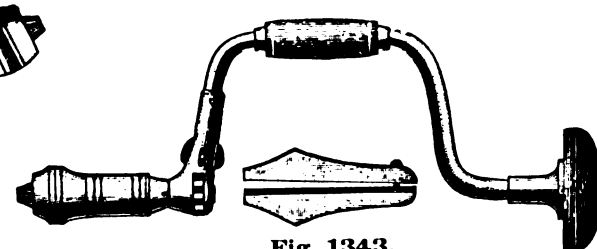


Fig. 1343.

This Brace combines the Improved Barber with a simple and reliable Ratchet.

BLACK WALNUT HEAD AND  
HANDLE—POLISHED.

No. 123, 10 in. sweep.	per doz.	\$23.00
" 121, 8 " "	" "	21.00

LIGNUM VITAE HEAD, ROSEWOOD  
HANDLE—NICKEL PLATED.

No. 131B, 12 in. sweep.	per doz.	\$39.00
" 132B, 10 " "	" "	36.00
" 133B, 8 " "	" "	33.00

## SPOFFORD BRACE.

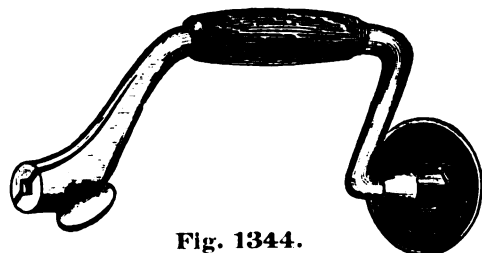


Fig. 1344.

IRON HEAD, REVOLVING WOOD HANDLE.  
POLISHED.

No. 8, 8 inch sweep.	per doz.	\$20.00
" 10, 10 " "	" "	23.00
" 12, 12 " "	" "	27.00
" 14, 14 " "	" "	29.00

## IMPROVED SPOFFORD BRACE.

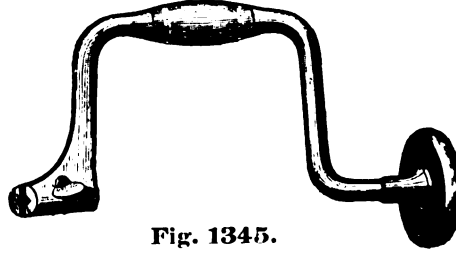


Fig. 1345.

LIGNUM VITAE HEAD, ROSEWOOD HANDLE.  
NICKEL PLATED.

No. 108, 8 inch sweep.	per doz.	\$24.00
" 110, 10 " "	" "	27.00
" 112, 12 " "	" "	30.00
" 114, 14 " "	" "	33.00

## FARMER'S BRACE.

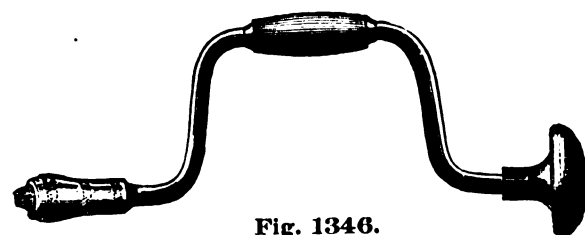


Fig. 1346.

MAPLE HEAD AND HANDLE.

Jaws are adjustable, and will fit any ordinary shank. The bows are of steel.

No. 213, 8 inch sweep.	per doz.	\$8.00
" 212, 10 " "	" "	9.00

## UPRIGHT BORING MACHINE.

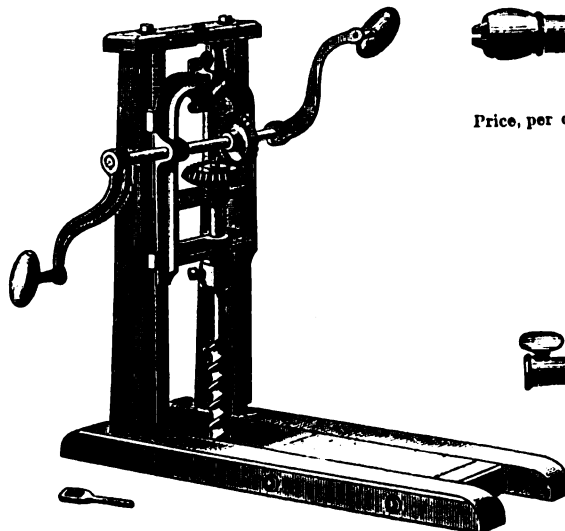


Fig. 1349.

GRADUATED WAYS.

Without Augers.	each,	\$5.50
With Augers, 1, 1½ and 2 ins.	"	

## EXTENSION BIT HOLDER.



Fig. 1347.

Price, per dozen.....\$20.00

## BALL BRACE.



Fig. 1348.

MAPLE HEAD AND BALL.

No. 25, 8 inch sweep.	per doz.	\$3.50
" 30, 10 " "	" "	4.00

## Prices, Boring Machine Augers.

Size, ins.	½	¾	1	1½	2
Per doz.	\$10.00	10.00	10.00	12.00	13.00
Size, ins.	1½	2	2½	3	4
Per doz.	\$16.00	18.00	22.00		

## ANGULAR BORING MACHINE.

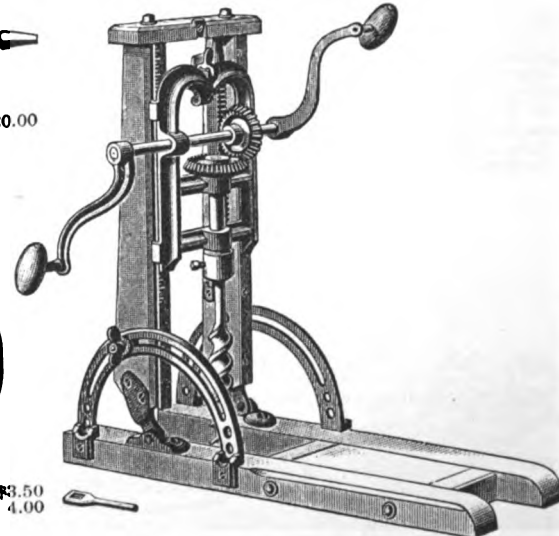


Fig. 1350.

GRADUATED WAYS.

Without Augers.	each,	\$6.75
With Augers, 1, 1½ and 2 ins.	"	



## AUGERS AND AUGER BITS. CARPENTERS' NUT AUGER.



Fig. 1351.

Extra Quality, Cast Steel.

Sizes, inches.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{3}{4}$	4
Per dozen.....	\$5.50	6.50	8.00	8.50	9.50	10.50	11.50	11.00	17.00	20.00	21.00	30.00	35.00	40.00	45.00	50.00	60.00	70.00

## LONG-EYE, OR CUBAN RING AUGER.



Fig. 1352.

Cast Steel.

Sizes, inches.....	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	3	$3\frac{1}{2}$	$3\frac{3}{4}$	4
Per dozen.....	\$6.50	6.50	7.50	9.00	9.50	10.50	11.50	12.50	15.00	19.00	22.00	27.50	33.00	45.00	55.00	75.00	

## RAILROAD AUGER.



Fig. 1353.

Cast Steel.

These Augers are made expressly for use upon railroads or bridges. The pole is long, and the edges being ground straight, they are convenient for millwrights' use, or in any place where deep boring is required.

$1\frac{1}{4}$  inch, 12 inch twist..... per doz. \$15.00       $1\frac{1}{2}$  inch, 12 inch twist..... per doz. \$20.00      2 inch, 12 inch twist..... per doz. \$28.00

## MILLWRIGHTS' AUGER.



Fig. 1354.

Extra Cast Steel, 36 inches long.

Sizes, inches.....	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2
Per dozen.....	\$15.00	15.00	15.00	18.00	21.00	24.00	30.00	36.00	38.50	42.00	45.00	48.00		

Without Screw.



Fig. 1355.

With Screw.



Fig. 1356.

## Prices Ship Augers, Either With or Without Screw.

Prices Sash Nails, Either With or Without Screw.												
Sizes, inches . . . .	4-8 & smaller.	4½ & 5	5½ & 6	6½ & 7	7½ & 8	8½ & 9	9½ & 10	10½ & 11	11½ & 12	12½ & 13-8ths.		
Per dozen . . . . .	\$7.50	9.00	10.50	12.00	13.50	15.00	16.50	18.00	21.00	24.00	24.00	
Sizes, inches . . . .	13½ & 14	14½ & 15	15½ & 16	16½ & 17	17½ & 18	18½ & 19	19½ & 20	20½ & 21	21½ & 22	22½ & 23-8ths.		
Per dozen . . . . .	\$25.50	27.00	31.50	48.00	60.00	72.00	84.00	96.00	108.00	120.00	120.00	

## Prices Extra Length Ship Augers, With or Without Screw.

18 inches twist,  $\frac{1}{2}$  to  $1\frac{1}{2}$  inches..... per quarter, \$0.40      20 inches twist,  $\frac{1}{2}$  to  $1\frac{1}{2}$  inches..... per quarter, \$0.48

## RING SHIP AUGER.



Fig. 1357.

Ring Ship Augers, with or without screw, add 10 per cent. to prices of Regular Ship Augers above.

## SHIP AUGER BITS, WITH OR WITHOUT SCREW.

Sizes, inches.....	1-8 to 4-8	$4\frac{1}{2}$ & 5	$5\frac{1}{2}$ & 6	$6\frac{1}{2}$ & 7	$7\frac{1}{2}$ & 8	$8\frac{1}{2}$ & 9	$9\frac{1}{2}$ & 10-8ths.
Per dozen.....	\$6.00	7.50	9.00	10.50	12.00	15.00	16.50

## SHIP AUGER PATTERN CAR BIT.



Fig. 1358.

12 inch twist. Designed especially for hard wood and rough boring.

Sizes, inches.....	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24-10ths.
Per dozen.....	\$8.50	9.00	9.50	10.00	10.50	11.00	11.50	12.00	12.50	13.00	14.00	15.00	15.50	16.00	17.00	17.50	18.50	19.00	21.50	22.00
In sets, 32 $\frac{1}{2}$ quarters, 1 each, from 1 to 16-16ths (13 bits).....	per set, \$12.00																			

## CAR BIT.



Fig. 1359.

Extra Solid Cast Steel. 12 Inch Twist.

Sizes, inches.....	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18-10ths.
Per dozen.....	\$0.50	6.50	7.50	9.00	10.25	11.25	12.75	13.25	15.50	16.50	17.75	18.75	20.50	21.00	27.00
In sets—21 quarters.....	per set, \$9.50														
24 quarters.....	per set, \$10.50														
32 $\frac{1}{2}$ quarters.....	per set, \$14.00														

**AUGER BITS AND EXPANSIVE BITS.**

**EXTRA CAST STEEL AUGER BIT.**  
With Double Spurs and Lips.

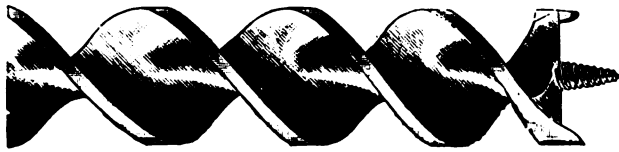


Fig. 1360.

**JENNINGS' SOLID CAST STEEL AUGER BIT.**  
With Extension Lips.



Fig. 1361.

**AUGER BITS IN FANCY WOOD BOX.**

Prices, Auger Bits.

Fig. 1360.

Sizes in 16ths.	Price per Dozen.	Sizes in 16ths.	Price per Dozen.
3	\$3.50	15	\$7.25
4	3.00	16	8.00
5	3.00	17	9.00
6	3.25	18	10.00
7	3.25	20	11.00
8	3.50	22	12.00
9	4.00	24	14.00
10	4.50		
11	5.00		
12	5.50		
13	6.00		
14	6.50		

IN SETS.

21 Quarters (1 each 5, 6, 7, 9, 10, 11, 12; and 2 of 4 and 8 16ths) per set.....	\$3.50
24 Quarters (1 each 4, 5, 7, 9, 11, 12; and 2 of 6, 8 and 10 16ths) per set.....	4.00
32½ Quarters (1 each size from 4 to 16 16ths, inclusive) per set.....	5.50

Prices, Auger Bits.

Fig. 1361.

Sizes in 16ths.	Price per Dozen.	Sizes in 16ths.	Price per Dozen.
3	\$3.40	16	\$9.00
4	3.00	17	9.60
5	3.40	18	10.20
6	3.80	19	10.80
7	4.40	20	11.40
8	4.80	21	12.00
9	5.20	22	12.60
10	5.60	23	13.20
11	6.10	24	13.80
12	6.60	26	15.00
13	7.20	28	16.20
14	7.80	30	17.40
15	8.40	32	18.60

IN SETS.

24 Quarters (1 each 4, 5, 7, 9, 11, 12; and 2 of 6, 8 and 10 16ths) per set.....	\$4.75
32½ Quarters (1 each size from 4 to 16 16ths, inclusive) per set.....	6.25

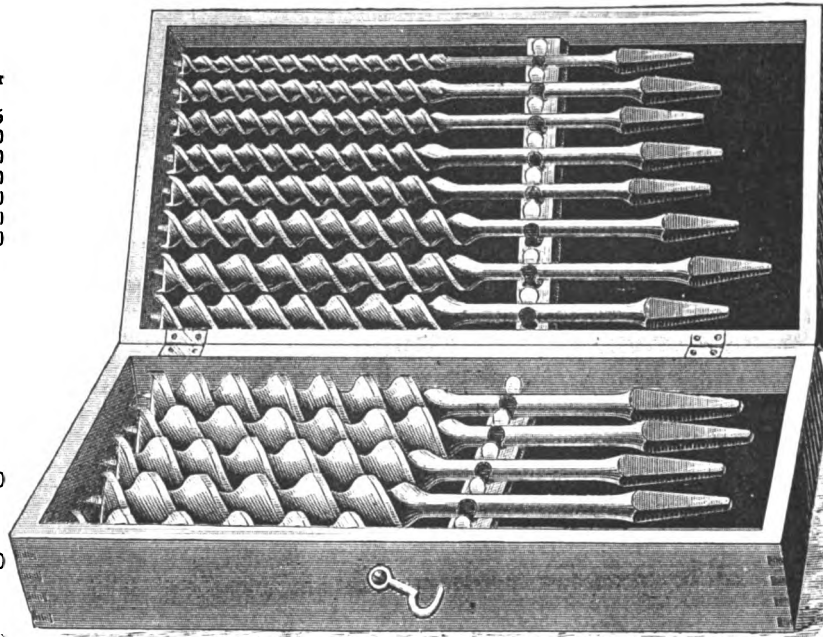


Fig. 1362.

Prices, Sets of Double Spur Bits in Wood Boxes.

32½ Quarters, 13 Bits (1 each size from 4 to 16-16ths, inclusive) per set.....\$3.25

Prices, Sets of Jennings' Bits in Wood Boxes.

32½ Quarters, 13 Bits (1 each size from 4 to 16-16ths, inclusive) per set..... \$5.00

**EXTRA MACHINE BITS WITH TURNED SHANKS.**  
Single Twist Bit.

The Single Twist Machine Bits are the best machine bits made for boring in hard wood. Made either straight or taper shanks.



Fig. 1363.

Double Spur Machine Bit.



Fig. 1364.

The Double Spur Machine Bits are carefully made of the best material, and are designed for general machine use. Made either straight or taper shanks.

Prices, Single Twist and Double Spur Machine Bits.

Sizes, inches	3	4	5	6	7	8	9	10	11	12	13	14	15-16ths.
Per dozen.....	\$5.10	4.50	5.10	5.70	6.60	7.20	7.80	8.40	9.15	9.90	10.80	11.70	12.60
Sizes, inches	16	17	18	19	20	21	22	23	24	26	28	30	32-16ths.
Per dozen.....	\$13.50	14.40	15.30	16.20	17.10	18.00	18.90	19.80	20.70	22.50	24.30	26.10	27.90

Above prices are for Bits up to 6 inches twist, with regular turned shanks, not exceeding 2½x½ inch, straight or taper. For every additional 3 inches of twist, or fractional part of same, add 20 per cent. to above lists. Special charges made for extra long shanks. In ordering always state style of bit, length of twist, length and diameter of shank.

**CLARK'S PATENT EXPANSIVE BIT.**

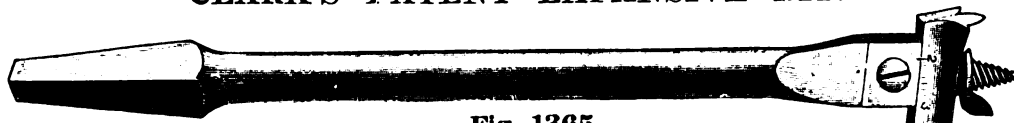


Fig. 1365.

Prices, Clark's Expansive Bits.

SMALL SIZE.

With 2 Cutters, boring from ½ to 1½ inches.

Per dozen..... \$18.00

LARGE SIZE.

With 2 Cutters, boring from ¾ to 3 inches.

Per dozen..... \$26.00

Prices, Extra Cutters.

No.	1	2	3	4	5
Cutting inches.....	½ to ¾	¾ to 1½	¾ to 1¾	1¾ to 3	3 to 4
Per dozen.....	\$3.00	3.75	5.25	6.00	12.00

**THE MODEL EXPANSIVE BIT.**

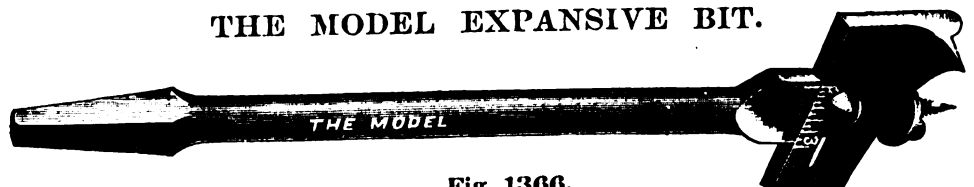


Fig. 1366.

No. 10, cutting from ½ to 1½ ins.....	per doz., \$18.00	No. 14, cutting from ¾ to 3 ins.....	per doz., \$26.00
" 12, " ¾ to 2 ".....	24.00	" 15, " ¾ to 4 ".....	40.00
" 13, " ¾ to 3 ".....	26.00		

The Cutters in the Model Bit are so fitted and firmly held as to be absolutely immovable in use.

## GIMLET BITS, SCREW DRIVERS, ETC.

## DOUBLE CUT GIMLET BIT.

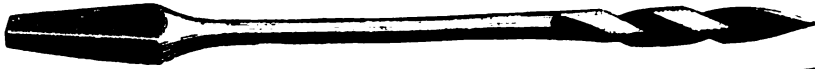


Fig. 1367.

Nos.	1	2	3	4	5	6
Per dozen	\$1.00	1.13	1.25	1.38	1.50	1.63
Assorted, Nos. 1 to 6	per dozen, \$1.25					

## ELECTRIC LIGHT AND TELEPHONE BITS.

Sizes, inches	6, 7, 8 and 9-32ds.	10, 11 and 12-32ds.	14 and 16-32ds.
Length 10 inches	per dozen, \$1.00	5.00	6.00
" 12 "	" 5.00	6.00	7.00
" 15 "	" 6.00	7.00	8.00
" 18 "	" 7.00	8.00	9.00
" 24 "	" 9.00	10.00	11.00
" 30 "	" 10.00	11.00	12.00

## GERMAN PATTERN GIMLET BIT.

Diamond Point.



Fig. 1368.

Sizes, inches	1	2	3	4	5	6	7	8	9-32ds.
Per dozen	\$1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.25
Sizes, inches	10	11	12	14	16-32ds.	Assorted, 4 to 8-32ds.			
Per dozen	\$1.25	1.50	1.50	1.75	1.75	1.10			

## CENTER BITS.

Sizes, inches	1/8 to 3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	1 7/8	2
Per dozen	\$0.70	.78	.85	.90	1.00	1.20	1.50	1.70	2.00
Sizes, inches	1 3/4	2	Assorted, to 1	to 1 1/4	to 1 1/2	to 1 3/4	to 1 7/8	to 2	
Per dozen	\$2.20	2.45	.80	.90	1.00	1.10	1.10	1.25	

## GERMAN PATTERN POD BIT.



Fig. 1369.

Sizes, inches	4	5	6	7	8	9	10-32ds.
Per dozen	\$1.25	1.25	1.25	1.25	1.25	1.25	1.25
Assorted, 4 to 10-32ds.	per dozen, \$1.25						

## BELL HANGERS' GIMLETS.

1-16, 4-16 or 5-16 in. Whole length 24 to 36 inches. per dozen, \$12.00

## EXTRA NAIL GIMLET.

Applewood Head.

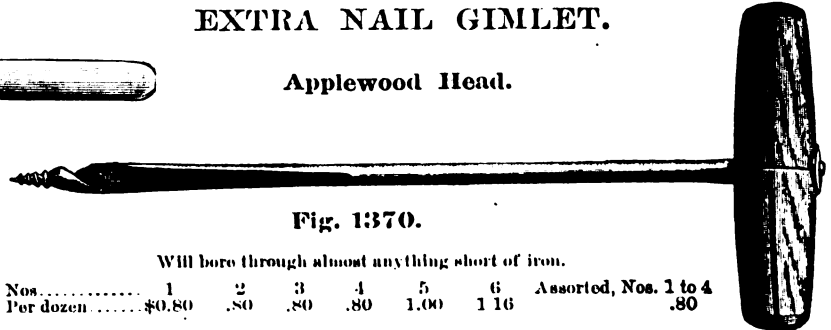


Fig. 1370.

Will bore through almost anything short of iron.

Nos.	1	2	3	4	5	6	Assorted, Nos. 1 to 4
Per dozen	\$0.80	.80	.80	.80	1.00	1.16	.80

## CAST STEEL NAIL GIMLETS.

METAL HEAD.

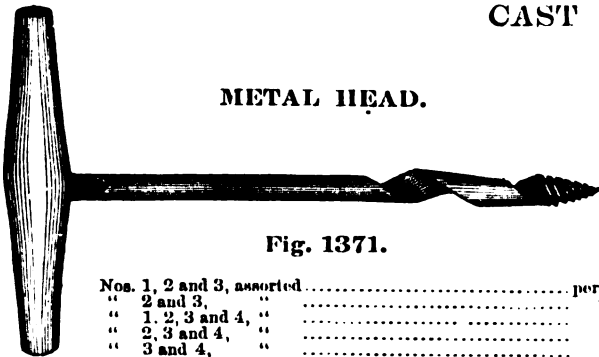


Fig. 1371.

Nos. 1, 2 and 3, assorted	per gross, \$1.00
" 2 and 3, "	4.50
" 1, 2, 3 and 4, "	5.00
" 2, 3 and 4, "	5.50
" 3 and 4, "	6.00

WOOD HEAD.

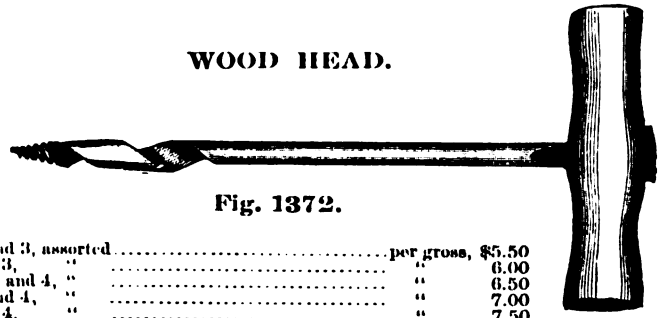


Fig. 1372.

Nos. 1, 2 and 3, assorted	per gross, \$5.50
" 2 and 3, "	6.00
" 1, 2, 3 and 4, "	6.50
" 2, 3 and 4, "	7.00
" 3 and 4, "	7.50

## METAL HEAD SPIKE GIMLETS.

Nos. 1, 2 and 3, assorted	per gross, \$8.50	Nos. 2 and 3, assorted	per gross, \$9.00	Nos. 2, 3 and 4, assorted	per gross, \$9.50
---------------------------	-------------------	------------------------	-------------------	---------------------------	-------------------

## ROUND SCREW DRIVER BIT.



Fig. 1373.

Best Tool Steel, assorted sizes. per dozen, \$2.00

## PLAIN SCREW DRIVER BIT.



Fig. 1374.

Cast Steel, assorted sizes. per dozen, \$2.00  
Cast Steel, extra heavy and long. per dozen, 2.50

## SLOTTED SCREW DRIVER BIT.



Fig. 1375.

Cast Steel, assorted sizes. per dozen, \$2.50

## RATCHET SCREW DRIVER.



Fig. 1376.

Simply sliding the button from one side of the plate to the other throws one pawl out and lets another into the teeth of the ratchet, changing from a right to a left hand action instantly; or, by leaving button midway, the blade remains stationary.

Sizes, inches	4	5	6	8	10	12
Per dozen	\$0.00	10.20	12.00	13.50	15.00	16.50

## MACHINISTS' SCREW DRIVER.

Extra Quality, Warranted.



Fig. 1377.

Drop-forged from best tool steel, spring tempered, with rosewood handle.

No. 1. 1/2x3 ins.	per doz. \$1.00	No. 2. 1/2x3 ins.	per doz. \$1.00	No. 3. 5-16x3 ins.	per doz. \$4.50
No. 4. 3/4x3 inches	per dozen, \$1.50	No. 5. 1/2x6 inches	per dozen, \$6.00		

SCREW DRIVERS, HOLLOW AUGERS, ETC.  
FLAT BLADE SCREW DRIVER.

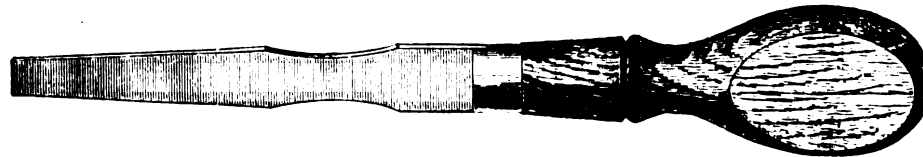


Fig. 1378.

NO. 40, CAST STEEL BLADE—BEECHWOOD HANDLE.  
 Sizes, inches... 1½ 2 3 4 5 6 7 8 10  
 Per dozen.....\$1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.75 6.00

NO. 1, FORGED STEEL BLADE—BLACK HANDLE.  
 Sizes, inches... 2 3 4 5 6 7 8 10 12  
 Per dozen...\$2.40 3.00 3.60 4.20 4.80 5.90 6.50 10.00 11.00

ROUND BLADE SCREW DRIVER.

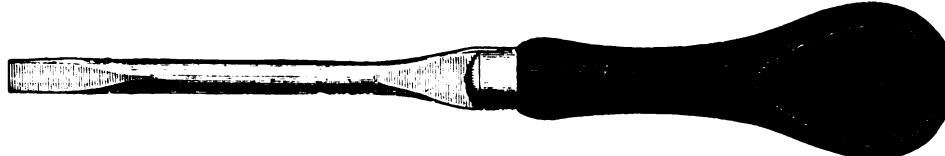


Fig. 1379.

NO. 60, HIGHLY FINISHED CAST STEEL, FORGED ROUND BLADE—BLACK HANDLE.  
 Sizes, inches... 1½ 2 3 4 5 6 7 8 10 12  
 Per dozen.....\$2.75 3.00 3.60 4.30 5.00 5.70 7.00 7.70 12.00 13.00

NEW PATTERN HOLLOW AUGER.

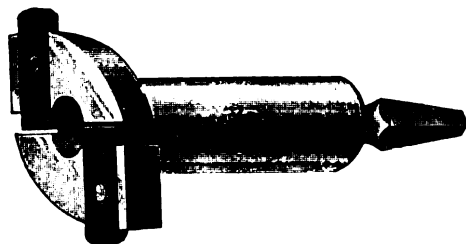


Fig. 1380.

Sizes, ins. ¾ 1½ ¾ 3¼ 7¼ 1 1½ 1¼  
 Per doz. \$12.00 12.00 14.00 14.00 16.00 16.00 20.00 20.00

EXPANSIVE HOLLOW AUGER.

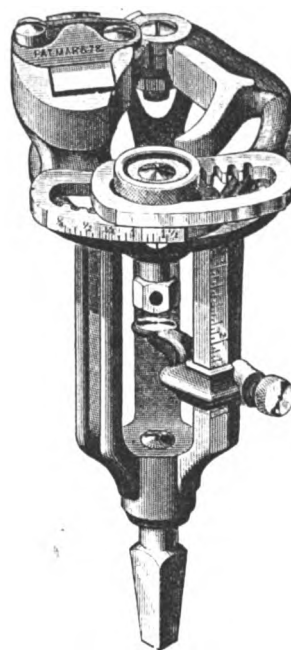


Fig. 1383.

Cuts any size from 1¼ to 1½ inches. The pivoted jaws are provided with a graduated scale, by which the size of the tenon is regulated. Has movable stop to regulate length of tenon.

Per dozen.....\$60.00

NOVELTY HOLLOW AUGER.

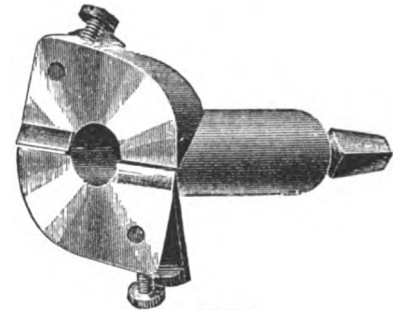


Fig. 1381.

Sizes, ins. ¾ 1½ ¾ 3¼ 7¼ 1 1½ 1¼  
 Per doz. \$12.00 12.00 14.00 14.00 16.00 16.00 20.00 20.00

SPOKE TRIMMER.

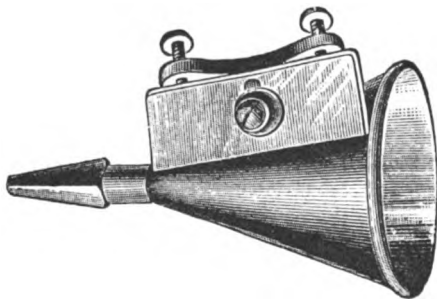


Fig. 1382.

With Adjustable Knife.....per doz., \$10.00

DOWEL POINTER.

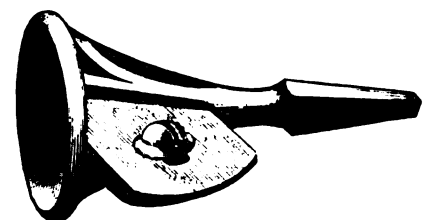


Fig. 1384.

Pointing from 0 to ¾ inch.....per doz., \$1.50

SCROLL POINT TAP BORER.

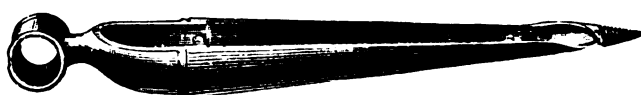


Fig. 1385.

Complete, with Handles.

Sizes, inches... 1½ 1¾ 2  
 Per dozen .....\$8.50 9.50 11.50

VOLUTE TAP BORER.



Fig. 1386.

Complete, with Handles.

Sizes, inches... 1½ 1¾ 2 2½  
 Per dozen.....\$13.00 15.00 18.00 24.00

CLARK'S TAP BORER.



Fig. 1387.

Complete, with Handles.

Sizes, inches... 1½ 1¾ 1¾ 2  
 Per dozen .....\$6.00 7.00 8.00 10.00

ENTERPRISE TAP BORER.



Fig. 1388.

No. 1, boring from 5/8 to 1½ inches.....per doz., \$18.00  
 " 2, " 1½ to 2 " " " 24.00  
 " 3, " 1½ to 3 " " " 36.00

## WRENCHES.

## DROP FORGED ENGINEERS' WRENCHES.

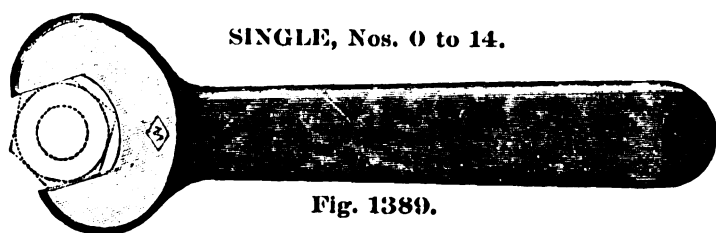


Fig. 1389.

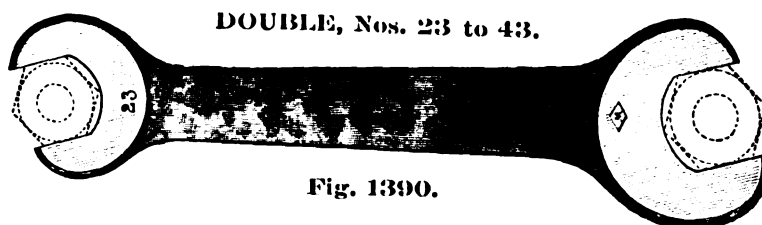


Fig. 1390.

These Wrenches are particularly adapted for machine shops, locomotives, steam engines and pumps. The opening forms an angle of  $15^\circ$  with the handle, which admits of turning a hexagon nut completely around in situations where obstructions limit the handle to a swing of only  $30^\circ$ .

Nos.	Size Bolt U.S. Standard Nut. Inches.	Unfinished Opening. Inches.	Finished Opening. Inches.	Extreme Length. Inches.	Thickness Head. Inches.	Unfinished. Each.	Finished. Each.
0	$\frac{3}{16}$	$\frac{1}{8}$	$\frac{1}{8}$	27	$\frac{3}{4}$	\$0.09	\$0.18
1	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	31	$\frac{3}{4}$	.10	.20
2	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	34	$\frac{3}{4}$	.12	.24
3	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	38	$\frac{3}{4}$	.14	.28
4	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	42	$\frac{3}{4}$	.17	.34
5	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	46	$\frac{3}{4}$	.20	.40
6	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	50	$\frac{3}{4}$	.25	.50
7	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	54	$\frac{3}{4}$	.32	.61
8	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	58	$\frac{3}{4}$	.40	.80
9	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	62	$\frac{3}{4}$	.50	1.00
10	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	66	$\frac{3}{4}$	.65	1.30
11	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	70	$\frac{3}{4}$	.85	1.70
12	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	74	$\frac{3}{4}$	1.10	2.20
13	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	78	$\frac{3}{4}$	1.40	2.80
14	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	82	$\frac{3}{4}$	1.75	3.50

Nos.	Size Bolt U.S. Standard Nut. Inches.	Unfinished Opening. Inches.	Finished Opening. Inches.	Extreme Length. Inches.	Thickness Head. Inches.	Unfin- ished. Each.	Fin- ished. Each.
23	$\frac{3}{16}$ & $\frac{1}{4}$	$\frac{5}{16}$ & $\frac{3}{8}$	$\frac{3}{8}$ & $\frac{1}{2}$	4	$\frac{3}{4}$ & $\frac{3}{8}$	\$0.15 \$0.30	
24	$\frac{3}{16}$ & $\frac{5}{16}$	$\frac{5}{16}$ & $\frac{1}{2}$	$\frac{3}{8}$ & $\frac{3}{8}$	4 $\frac{1}{2}$	$\frac{3}{4}$ & $\frac{5}{16}$	.17 .34	
25	$\frac{1}{4}$ & $\frac{5}{16}$	$\frac{1}{32}$ & $\frac{1}{2}$	$\frac{1}{2}$ & $\frac{19}{32}$	4 $\frac{1}{2}$	$\frac{3}{16}$ & $\frac{5}{16}$	.18 .36	
26	$\frac{1}{4}$ & $\frac{3}{8}$	$\frac{13}{32}$ & $\frac{19}{32}$	$\frac{1}{2}$ & $\frac{11}{16}$	5 $\frac{1}{2}$	$\frac{3}{16}$ & $\frac{3}{8}$	.20 .40	
27	$\frac{5}{16}$ & $\frac{3}{8}$	$\frac{1}{2}$ & $\frac{19}{32}$	$\frac{19}{32}$ & $\frac{11}{16}$	5 $\frac{1}{2}$	$\frac{15}{64}$ & $\frac{3}{8}$	.21 .42	
28	$\frac{5}{16}$ & $\frac{7}{16}$	$\frac{1}{2}$ & $\frac{11}{16}$	$\frac{19}{32}$ & $\frac{3}{4}$	6 $\frac{1}{2}$	$\frac{15}{64}$ & $\frac{3}{16}$	.23 .46	
29	$\frac{3}{8}$ & $\frac{7}{16}$	$\frac{19}{32}$ & $\frac{11}{16}$	$\frac{11}{16}$ & $\frac{3}{4}$	6 $\frac{1}{2}$	$\frac{3}{32}$ & $\frac{3}{16}$	.25 .50	
30	$\frac{3}{8}$ & $\frac{1}{2}$	$\frac{19}{32}$ & $\frac{3}{4}$	$\frac{11}{16}$ & $\frac{7}{8}$	7 $\frac{3}{4}$	$\frac{3}{32}$ & $\frac{3}{8}$	.28 .56	
31	$\frac{7}{16}$ & $\frac{1}{2}$	$\frac{11}{16}$ & $\frac{3}{4}$	$\frac{3}{4}$ & $\frac{7}{8}$	7 $\frac{3}{4}$	$\frac{3}{16}$ & $\frac{3}{8}$	.30 .60	
32	$\frac{7}{16}$ & $\frac{1}{16}$	$\frac{11}{16}$ & $\frac{7}{8}$	$\frac{3}{4}$ & $\frac{3}{4}$	8 $\frac{3}{4}$	$\frac{5}{16}$ & $\frac{3}{8}$	.34 .68	
33	$\frac{1}{2}$ & $\frac{1}{16}$	$\frac{3}{32}$ & $\frac{7}{8}$	$\frac{7}{8}$ & $\frac{31}{32}$	8 $\frac{3}{4}$	$\frac{3}{16}$ & $\frac{5}{16}$	.36 .72	
34	$\frac{1}{2}$ & $\frac{5}{8}$	$\frac{3}{32}$ & $\frac{3}{4}$	$\frac{7}{8}$ & $1\frac{1}{16}$	9 $\frac{3}{4}$	$\frac{3}{8}$ & $\frac{1}{2}$	.41 .82	
35	$\frac{5}{16}$ & $\frac{5}{8}$	$\frac{7}{8}$ & $\frac{31}{32}$	$\frac{31}{32}$ & $1\frac{1}{16}$	9 $\frac{3}{4}$	$\frac{5}{16}$ & $\frac{1}{2}$	.43 .86	
36	$\frac{5}{16}$ & $\frac{3}{4}$	$\frac{7}{8}$ & $1\frac{1}{32}$	$\frac{31}{32}$ & $1\frac{1}{4}$	11 $\frac{1}{2}$	$\frac{5}{16}$ & $1\frac{1}{16}$	.50 1.00	
37	$\frac{5}{8}$ & $\frac{3}{4}$	$\frac{31}{32}$ & $1\frac{1}{32}$	$1\frac{1}{16}$ & $1\frac{1}{4}$	11 $\frac{1}{2}$	$\frac{3}{32}$ & $\frac{1}{16}$	.53 1.06	
38	$\frac{5}{8}$ & $\frac{7}{8}$	$\frac{3}{32}$ & $1\frac{1}{2}$	$1\frac{1}{16}$ & $1\frac{7}{16}$	13 $\frac{1}{2}$	$\frac{1}{16}$ & $\frac{3}{32}$	.62 1.24	
39	$\frac{3}{4}$ & $\frac{7}{8}$	$1\frac{1}{32}$ & $1\frac{1}{16}$	$1\frac{1}{4}$ & $1\frac{7}{16}$	13 $\frac{1}{2}$	$\frac{1}{16}$ & $\frac{3}{16}$	.65 1.30	
40	$\frac{3}{4}$ & 1	$1\frac{1}{32}$ & $1\frac{1}{8}$	$1\frac{1}{4}$ & $1\frac{5}{8}$	15 $\frac{1}{2}$	$\frac{3}{16}$ & $\frac{3}{8}$	.78 1.56	
41	$\frac{7}{8}$ & 1	$1\frac{11}{32}$ & $1\frac{1}{2}$	$1\frac{7}{16}$ & $1\frac{5}{8}$	15 $\frac{1}{2}$	$\frac{3}{32}$ & $\frac{3}{8}$	.82 1.64	
42	$\frac{7}{8}$ & $1\frac{1}{8}$	$1\frac{11}{32}$ & $1\frac{3}{4}$	$1\frac{7}{16}$ & $1\frac{11}{8}$	17 $\frac{1}{2}$	$\frac{3}{32}$ & $\frac{3}{4}$	1.00 2.00	
43	1 & $1\frac{1}{4}$	$1\frac{17}{32}$ & $1\frac{3}{4}$	$1\frac{5}{8}$ & $1\frac{13}{8}$	17 $\frac{1}{2}$	$\frac{3}{32}$ & $\frac{3}{2}$	1.08 2.16	

The finished Wrenches are polished, case-hardened and milled to fit U. S. standard nuts, but can be milled to other sizes when required.

Prices will be quoted for Straight, Spanner, Box, Socket Chuck, Track and other Wrenches of any size or shape, upon receipt of samples or models.

## KEY WRENCH.



Fig. 1391.

## Prices, Key Wrenches.

Wrought iron, forged.

Length of Jaw, inches.....	2 1/2	3	3 1/2	4	4 1/2	5
Each .....	\$3.25	3.50	4.25	4.50	6.25	7.00

## Prices, Pocket Wrenches.

Length, Inches.	Opens, Inches.	Weight, Ounces.	Black, Per Dozen.	Nickel Plated, Per Dozen.
4	1	6 1/2	\$9.00	\$10.00
5	1 1/4	9 1/2	10.00	12.00
6	1 1/2	15 1/2	12.00	15.00

## POCKET WRENCH.



Fig. 1392.

## DIAMOND WRENCH.

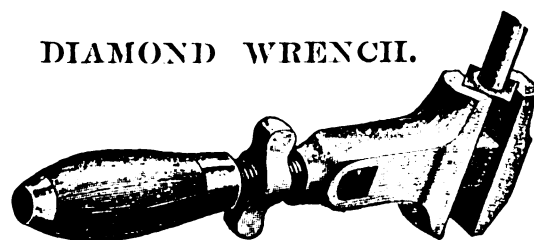


Fig. 1393.

## Prices, Diamond Wrenches.

Forged from steel, case-hardened and highly polished.

Length, inches	5	6	7	8	10	12	15	18
Per dozen ...	\$8.00	9.00	10.00	11.00	12.00	15.00	24.00	30.00

This Wrench can be fastened to the corners as well as to the face of the nut, which allows giving the eighth turn in corners or difficult places.

It is a complete hand vise for holding all articles within its capacity. Diamond jaws will hold nut without turning up the thumb screw.

## BAXTER'S WRENCHES.

## DIAGONAL WRENCH.

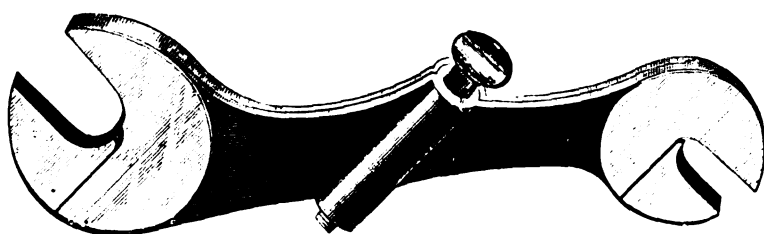


Fig. 1394.

Length, inches.....	4	6	8	10	12
Per dozen.....	\$6.00	9.00	12.00	18.00	24.00

## S WRENCH.

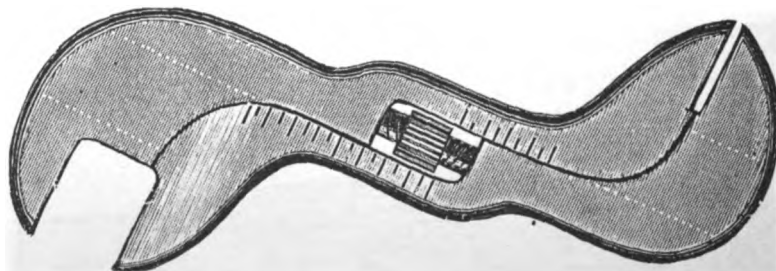


Fig. 1395.

Length, inches.....	4	6	8	10	12
Per dozen.....	\$6.00	9.00	12.00	18.00	24.00

The peculiar shape of these Wrenches enable them to fit corners about machinery, and makes them useful and convenient for mills, machine shops, etc.



## ACME SOLID STEEL WRENCH.

THORNTON N. MOTLEY, AGENT.

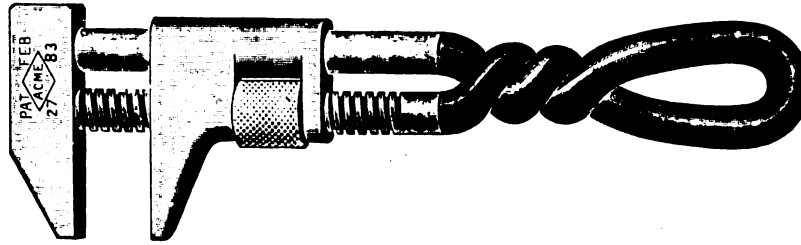


Fig. 1402a.

For Railroads, Machine Shops, Engineers, etc.

This Wrench is very simple in construction, being made of but four pieces, all of which are solid steel, while the common wrench includes from seven to nine parts.

It has no wood handle to split, wear loose or become saturated with oil.

Additional strength is secured by the double slide feature. The thread in the nut is considerably longer than is usual in wrenches, thus lessening the play in the slides and the liability of the nut thread stripping under severe strain.

The shape of Wrench allows a larger opening of jaws in proportion to length than any other wrench.

The list price for the Acme Bright Wrench is same as other makers charge for Black Wrenches.

## Prices and Capacity, Bright Wrenches.

Length, inches.....	5	6	8	10	12	15	18	21
Jaws open, inches.....	¾	1	1½	2	2½	3¾	5¼	5½
Per dozen.....	\$8.00	9.00	10.00	12.00	14.00	24.00	30.00	36.00

## Prices and Capacity, Nickeled Wrenches.

Length, inches.....	5	6	8	10	12	15	18	21
Jaws open, inches.....	¾	1	1½	2	2½	3¾	5¼	5½
Per dozen.....	\$9.60	10.80	12.60	15.00	18.00	28.80	36.00	57.00

Every Wrench is warranted.

For Acme Pipe Wrenches see page 112½.



# WRENCHES.

## LAG SCREW WRENCH.

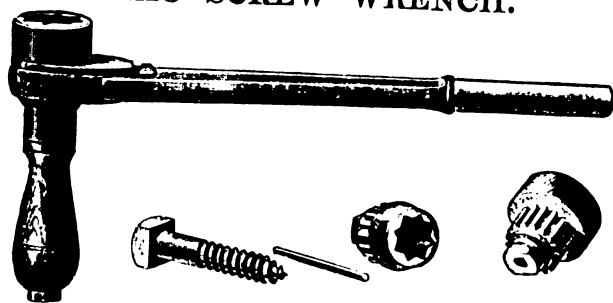


Fig. 1396.

With this tool lag screws can be turned either in or out without taking off the wrench. For overhead work and work in close places this tool is invaluable.

### Sizes of Sockets.

For Square Nuts,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$ ,  $\frac{7}{8}$ , 1,  $1\frac{1}{8}$ ,  $1\frac{1}{4}$  inches.  
For Hexagon Nuts,  $\frac{3}{4}$ ,  $\frac{7}{8}$ , 1,  $1\frac{1}{8}$ ,  $1\frac{1}{4}$ ,  $1\frac{3}{8}$  "

Wrenches, with single socket, any of above sizes.....each, \$3.00  
Extra Sockets....." .50

Sockets made to order to fit special nuts or bolts.

## FISH JOINT BOLT WRENCHES.

Same style as Lag Screw Wrench, Fig. 1396, but with long lever.  
Wrenches, with 20 inch handles.....each, \$5.00

## RATCHET WRENCH.

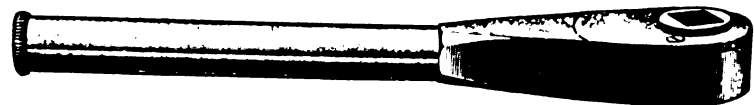


Fig. 1397.

Adjustment is at end of handle.

No. 1.	10 inch Lever	any one Gear on the list	each, \$3.00
" 2.	12 "	" " "	" 4.00
" 3.	15 "	" " "	" 5.00
" 3 $\frac{1}{2}$ .	18 "	" " "	" 6.00
" 4.	18 "	" " "	" 7.00

### Prices, Wrench Gears.

No. 1.	$\frac{3}{4}$ , $\frac{1}{2}$ , $\frac{5}{8}$ inch Square Nut, or	$\frac{5}{8}$ , $\frac{3}{4}$ inch Hexagon Nut.....	each, \$0.50
" 2.	$\frac{7}{8}$ , $\frac{1}{2}$ , $\frac{3}{4}$ "	" " " " " " " "	" .60
" 3.	$\frac{7}{8}$ , $\frac{1}{2}$ , $\frac{3}{4}$ "	" " " " " " " "	" .75
" 4.	$1\frac{1}{4}$ , $1\frac{1}{2}$ , $1\frac{3}{4}$ "	" " " " " " " "	" 1.00

\* This handle takes a No. 3 Gear. In ordering please state size gear wanted, as a No. 1 Wrench may contain either a gear for  $\frac{3}{4}$  and  $\frac{5}{8}$  square nut or for  $\frac{5}{8}$  and  $\frac{3}{4}$  hexagon nut.

## BRIDGE BUILDERS' WRENCHES.

Same style as Ratchet Wrench, Fig. 1397, but with long lever.

No. 1.	3 ft. Lever.	$1\frac{1}{4}$ , $1\frac{1}{2}$ in. Square Nut, or	$1\frac{1}{2}$ , $1\frac{3}{4}$ in. Hexagon Nut.....	each, \$9.00
" 2.	" "	$1\frac{3}{4}$ , 2 " "	" " " " " "	" 15.00
" 3.	$3\frac{1}{4}$ "	$2\frac{1}{4}$ , $2\frac{1}{2}$ " "	" " " " " "	" 18.00
" 4.	$3\frac{1}{2}$ "	$2\frac{3}{4}$ , $3\frac{1}{4}$ " "	" " " " " "	" 21.00
" 5.	$3\frac{1}{2}$ "	$3\frac{1}{2}$ , $3\frac{3}{4}$ " "	" " " " " "	" 26.00

The above prices cover only one gear for each Wrench.

### Prices, Extra Gears.

No. 1. ea. \$1.00	No. 2. ea. \$2.00	No. 3. ea. \$3.00	No. 4. ea. \$3.50	No. 5. ea. \$4.00
-------------------	-------------------	-------------------	-------------------	-------------------

## MERRICK'S SCREW WRENCH.

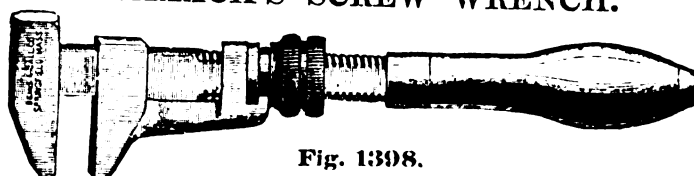


Fig. 1398.

Bright Finish.

Length, inches.....	8	10	12	15	18
Per dozen.....	\$11.00	14.00	16.00	26.00	32.00

## BRIGGS' SCREW WRENCH.

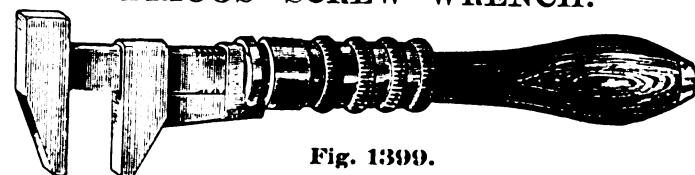


Fig. 1399.

Bright Finish.

Length, inches.....	8	10	12	15	18
Per dozen.....	\$13.75	17.50	20.00	32.50	40.00

## EXTRA HEAVY SCREW WRENCH.

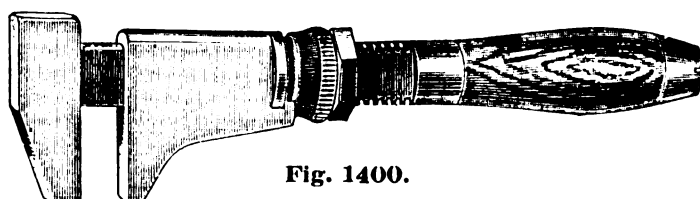


Fig. 1400.

This Wrench is one-half heavier than the regular Screw Wrench, being proportionately enlarged in all its parts, making it very strong and inflexible. Made of the best material. Parts interchangeable.

Bright Finish.

Length, inches.....	12	15	18	21
Per dozen.....	\$26.00	32.00	38.00	42.00

## COE'S PATTERNS WRENCH.

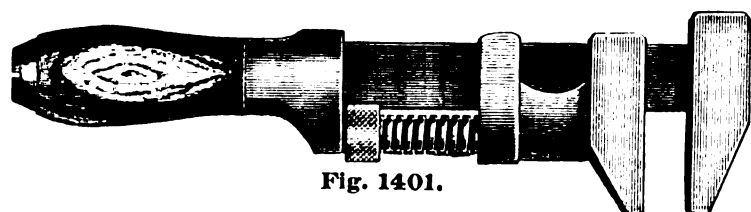


Fig. 1401.

Wrought Iron Bar.

Length, inches.....	6	Black.			
		8	10	12	15
Per dozen.....	\$9.00	10.00	12.00	14.00	24.00
Length, inches.....	6	Bright.			
		8	10	12	15
Per dozen.....	\$10.00	11.00	14.00	16.00	26.00

## COE'S GENUINE PATENT KNIFE HANDLE WRENCH.

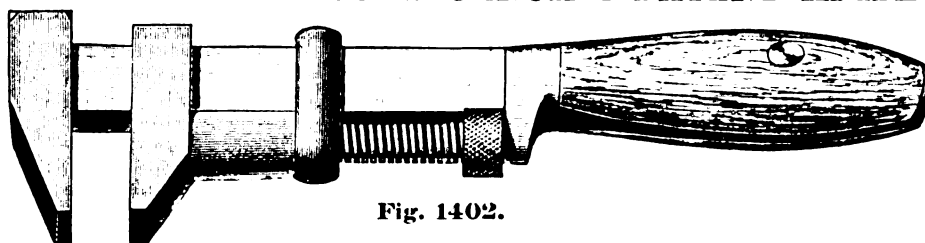


Fig. 1402.



Fig. 1403.

Coe's Genuine Wrenches are now all made as shown in above cuts. The ferrule, frame and tip of handle are cast in one piece of malleable iron, with shank of bar solidly keyed into same, thereby preventing any possible displacement of either ferrule or tip. The iron frame is covered on either side by blocks of southern dogwood, rigidly riveted to the sides. The bar of wrench is made straight the whole length, full size of larger part of the old wrench, and will stand nearly one-third more strain.

### Prices.

Length, inches	4	6	8	10	12	15	18	21
Black, per doz.	\$9.00	10.00	12.00	14.00	24.00	30.00	36.00	
Bright, " "	\$10.00	10.00	11.00	14.00	16.00	26.00	32.00	38.00

### Opening Capacity of Jaws and Contents of Cases.

Length, inches.....	4	6	8	10	12	15	18	21
Will open, inches.....	$\frac{1}{2}$	$\frac{7}{8}$	$1\frac{1}{4}$	$1\frac{3}{4}$	$2\frac{1}{8}$	$2\frac{5}{8}$	3	$4\frac{1}{8}$
Cases contain dozen....	6	6	6	6	6	3	2	1

## FILES AND RASPS.

ROUGH.

BASTARD.

2d CUT.

SMOOTH.

DEAD SMOOTH.

MILL BASTARD.

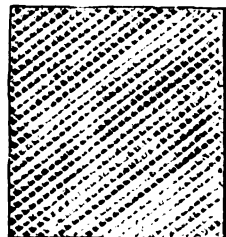


Fig. 1404.

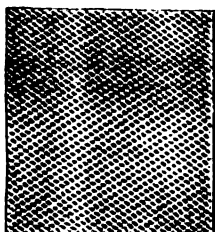


Fig. 1405.

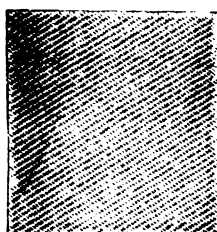


Fig. 1406.

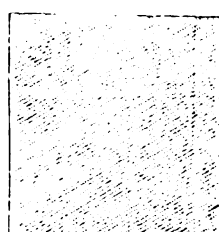


Fig. 1407.

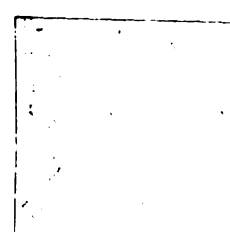


Fig. 1408.

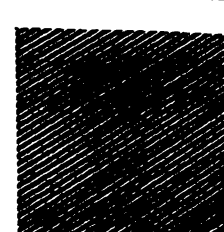


Fig. 1409.

MILL 2d CUT.

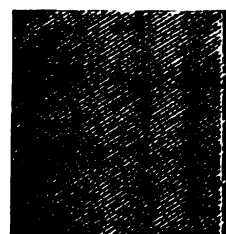


Fig. 1410.

RASP.

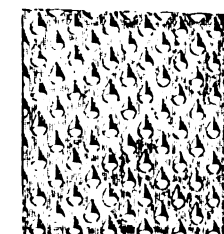


Fig. 1411.

These cuts are one inch sections taken from the centers of twelve inch files, and indicate the style of cut. I carry in stock a full line of all sizes of the regular cuts, and will furnish any special files promptly. I can furnish also all kinds of Swiss Pattern Files for jewelers, watchmakers, toolmakers, etc. Rifflers and machinists' scrapers.

## Prices per Dozen.

MILL AND ROUND.				FLAT AND SQUARE.				HAND, WARDING & PILLAR.				HALF RD. & THREE SQ.			
Inch.	Bastard.	2d Cut.	Smooth.	Inch.	Bastard.	2d Cut.	Smooth.	Inch.	Bastard.	2d Cut.	Smooth.	Inch.	Bastard.	2d Cut.	Smooth.
4	\$1.80	\$2.15	\$2.40	4	\$2.00	\$2.40	\$2.65	4	\$2.25	\$2.70	\$3.00	4	\$2.50	\$3.00	\$3.30
5	2.00	2.40	2.65	5	2.20	2.60	2.90	5	2.50	3.00	3.30	5	2.80	3.35	3.70
6	2.25	2.65	2.95	6	2.50	2.95	3.25	6	2.80	3.30	3.65	6	3.20	3.80	4.15
7	2.55	3.00	3.30	7	2.90	3.40	3.75	7	3.20	3.75	4.15	7	3.70	4.35	4.80
8	2.90	3.40	3.70	8	3.40	4.00	4.35	8	3.70	4.35	4.75	8	4.30	5.00	5.50
9	3.30	3.85	4.20	9	4.00	4.70	5.10	9	4.35	5.10	5.55	9	5.00	5.85	6.40
10	3.80	4.40	4.80	10	4.70	5.45	5.90	10	5.20	6.00	6.55	10	5.80	6.75	7.30
11	4.50	5.20	5.65	11	5.60	6.50	7.05	11	6.30	7.30	7.95	11	6.70	7.75	8.45
12	5.40	6.20	6.75	12	6.70	7.70	8.40	12	7.50	8.60	9.40	12	7.80	9.00	9.75
13	6.50	7.45	8.05	13	8.00	9.15	10.00	13	8.90	10.20	11.00	13	9.10	10.40	11.25
14	7.80	8.90	9.65	14	9.50	10.90	11.80	14	10.50	12.00	13.00	14	10.60	12.10	13.10
15	9.30	10.60	11.45	15	11.20	12.75	13.75	15	12.30	14.00	15.10	15	12.40	14.15	15.25
16	11.00	12.50	13.40	16	13.10	14.85	16.00	16	14.30	16.20	17.50	16	14.50	16.50	17.70
17	12.90	14.60	15.60	17	15.25	17.25	18.45	17	16.60	18.75	20.10	17	16.90	19.10	20.50
18	15.10	16.90	18.10	18	17.65	19.75	21.20	18	19.20	21.50	23.00	18	19.60	22.00	23.50
19	17.60	19.70	21.10	19	20.30	22.75	24.35	19	22.10	24.75	26.50	19	22.60	25.30	27.10
20	20.40	22.85	24.50	20	23.20	26.00	27.85	20	25.30	28.35	30.35	20	26.00	29.10	31.20

**Extras.**  
 Mill Double Cut, advance 1 inch.  
 Mill Narrow Points, " 1 "  
 Cross Cut Blunt, " 1 "

**Extras.**  
 Cant Blunt (Double Cut), advance 2 inches.

**Extras.**  
 Ginsaw (Single), take Bastard price.  
 Slotting (Blunt), advance 2 inches.

**Extras.**  
 Knife, advance 1 inch.  
 High Back Hlf. Rd. (Blunt), adv. 2 ins.  
 Cross (Blunt), advance 2 inches.  
 Feather Edge (Blunt) advance 2 ins.

Inches	3	3½	4	4½	5	5½	6	7	8	9	10	11	12	13	14
Tapers, Single Cut	\$1.10	1.10	1.20	1.40	1.70	2.00	2.40	3.00	3.80	4.60	5.70	7.20	9.00	11.00	13.20
" Double Cut	1.60	1.60	1.75	2.00	2.40	2.75	3.25	4.00	4.95	5.90	7.10	8.80	10.80	12.90	15.20
Slim Tapers, Single Cut	1.20	1.20	1.30	1.45	1.70	1.90	2.10	2.50	3.00	3.70	4.50	5.50	6.80	8.30	10.00
" Double Cut	1.80	1.80	1.90	2.10	2.40	2.60	2.85	3.30	3.90	4.70	5.60	6.75	8.20	9.75	11.50
Pitsaw, Blunt, Single Cut	2.10	2.10	2.20	2.30	2.50	2.80	3.20	3.70	4.30	5.00	5.80	6.70	7.70		
Hooktooth, Blunt, Single Cut							3.60	3.90	4.40	5.10	6.00	7.10	8.40		

**Extras.**  
 Bandsaw, Heavy, Blunt, take Taper Double Cut price.  
 Bandsaw, Light, Blunt, take Slim Taper Double Cut prices.  
 Bandsaw, Taper Points, same price as Blunt.  
 Round Off, Blunt, Single Cut, take Hooktooth price.  
 Cantsaw, Blunt, Single Cut, take Pitsaw price.  
 Round Gulleting, Blunt, Single Cut, take Pitsaw price.

Reversible Taper Saw Files, No. 7, per doz., \$2.55. No. 8, per doz., \$2.80. No. 9, per doz., \$3.15. No. 10, per doz., \$3.70.

Inches	6	7	8	9	10	11	12	13	14	15	16	17	18
Horse Rasps { Plain					\$6.50	7.50	9.00	10.70	12.70	15.00	17.60	20.50	23.70
" { Beveled and ¾ Rasp					7.20	8.30	10.00	11.80	14.00	16.50	19.40	22.50	26.00
" { Tanged					9.00	10.25	12.00	14.00	16.50	19.50	23.00		
Wood Rasps, Half Round and Flat	\$4.20	5.00	6.10	7.30	8.75	10.40	12.30	14.50	16.90	19.60	22.50		
Cabinet, { Rasps	6.00	7.00	8.20	9.60	11.20	13.00	15.00	17.20	19.60	22.20	25.00		
" { Files	4.20	5.00	6.10	7.30	8.75	10.40	12.30	14.50	16.90	19.60	22.50		
Shoe Rasps, { Half Round and Flat	4.60	5.30	6.10	7.00	8.00	9.10	10.30	11.60	13.00				
" { Oval	5.30	6.10	7.00	8.00	9.10	10.30	11.60						

## Extras.

File Rasps, Flat and Half Round, take Flat and Half Round Wood Rasp price. Wood Files, Flat and Half Round, take Flat and Half Round Bastard price.

## EXTRAS (GENERAL).

One Round Edge, advance 7½ per cent., and Two Round Edges, 15 per cent. on respective kinds and cuts.  
 Blunt Files, not specified, advance one inch on respective kinds and cuts. Dead Smooth, double the price of Bastard cut.  
 Equalings (Bellied) advance 2 inches on respective kinds and cuts.  
 Sizes below 4 inches, not extended, take 4 inch price; ½ inches, not specified, take next higher full inch price.  
 Rough, Coarse, Union Cut, Brass or other than regular cuts, not specified, made upon regular or standard shaped blanks, advance one inch on respective kinds and cuts.  
 Single or Float Cut, not specified, on regular shapes, take Double Cut price.  
 Irregular Goods.—All lengths above those listed, and Files varying from standard sizes, to be classed as irregular, and subject to special prices.

# FILE HOLDERS AND FILE CLEANERS.

## WISE FILE HOLDER.



Fig. 1412.

## Prices, Vise File Holders.

No. 1. Holding Files 5 and 6 inches.....each,	\$1.25
" 2. " 8 " 10 " .....	1.50
" 3. " 12 " 14 " .....	1.75

## Prices, Surface File Holders.

No. 4. Holding Files 12, 13 and 14 inches.....each,	\$1.00
" 5. " 14, 15 " 16 " .....	1.25

## SURFACE FILE HOLDER.



Fig. 1413.

## FILE CARD.



Fig. 1414.

## Prices, File Cards.

This Card is provided with a scorer for removing the "pins" which fill up and clog the teeth, causing scratching in the work if not removed. It is held in a recess in the handle by a spring.

Per dozen.....\$2.50

## Prices, File Brushes and Cards.

This combination with the Scorer is the most complete file cleaner known. The brush is especially useful for fine files.

Per dozen.....\$4.40

## FILE CARD AND BRUSH.

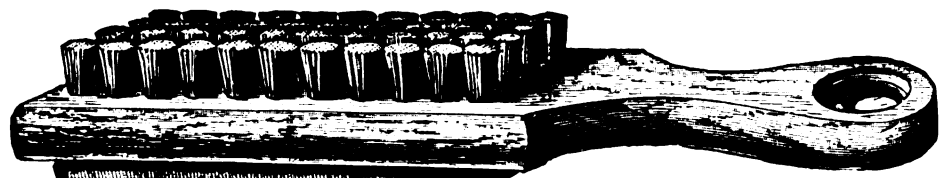


Fig. 1415.

# HAND SCREWS AND SCREW CLAMPS.

## HICKORY HAND SCREW.

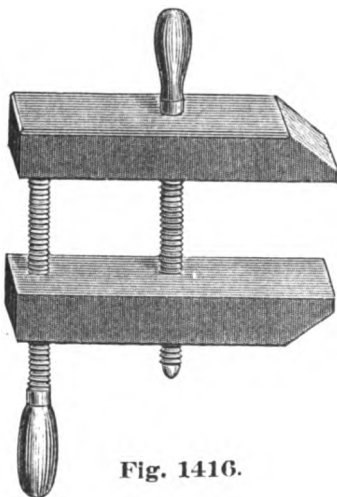


Fig. 1416.

## Prices, Hickory Hand Screws.

Plain Finish.		Extra Finish, Beaded Jaw.		Diameter of Screw.	Length of Screw.	Length of Jaw.	Size of Jaw.
Nos.	Per Dozen.	Nos.	Per Dozen.				
313	\$2.25	323	\$2.50	1/2 in.	10 ins.	6 ins.	1 x 1 1/4 in.
314	2.75	324	3.00	5/8 "	12 "	8 "	1 3/8 x 1 3/8 "
315	3.25	325	3.75	3/4 "	16 "	10 "	1 5/8 x 1 5/8 "
316	4.50	326	5.00	7/8 "	18 "	13 "	1 7/8 x 1 7/8 "
317	6.00	327	6.75	1 "	20 "	14 "	2 1/8 x 2 1/8 "
318	6.50	328	7.25	1 1/4 "	24 "	16 "	2 1/4 x 2 1/4 "
319	8.50	329	9.50	1 1/2 "	24 "	18 "	2 5/8 x 2 5/8 "
320	10.50	330	11.50	1 3/4 "	24 "	20 "	2 3/4 x 2 3/4 "
321	14.00	331	15.25	1 1/2 "	30 "	22 "	3 x 3 "

No. 322. Jewelers', 3/4 inch.....per doz. \$2.00 Toy, 3/8 inch.....per doz. \$1.50

## Prices, Cabinet Makers' Screw Clamps.

### Japanned.

No. 1. Opens 2 1/4 inches.....per doz.	\$1.35
" 2. " 2 1/4 " heavy.....	1.55
" 3. " 4 " ".....	2.65

### Japanned.

Swivel on end of screw.	
No. 32. Opens 2 1/4 inches.....per doz.	\$2.00
" 33. " 3 ".....	2.50

## CABINET MAKERS' SCREW CLAMP.

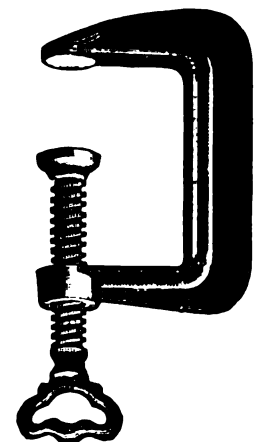


Fig. 1417.

## CARRIAGE MAKERS' SCREW CLAMP.

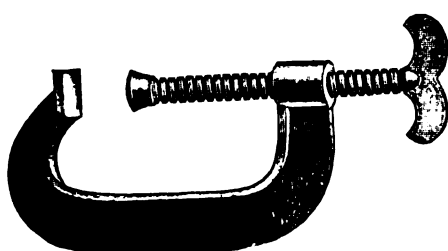


Fig. 1418.

## ADJUSTABLE SCREW CLAMP.

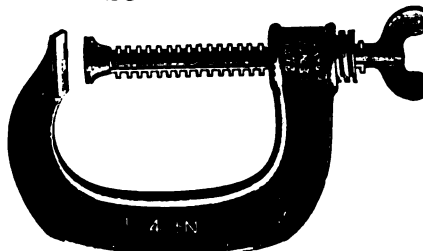


Fig. 1419.

## HEAVY SCREW CLAMP.

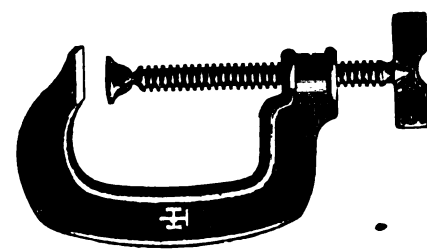


Fig. 1420.

Malleable iron. Swivel head on end of screw.				
Opens, inches...	2 1/2	3	4	5
Per dozen.....	\$6.00	7.00	10.00	12.00
Opens, inches...	6	7	8	10
Per dozen.....	\$16.00	20.00	25.00	30.00

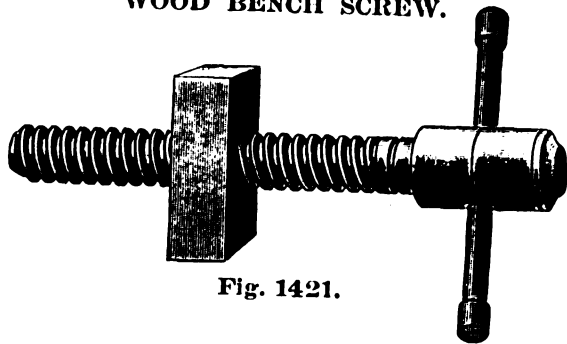
Malleable iron. Swivel head on end of screw.  
 Opens, inches 3 4 5 6 8  
 Per dozen.... \$1.50 6.50 7.50 9.00 11.50  
 By turning the bolt one-quarter turn to the left it can be moved its full length out or in; when turning it to the right it operates like any other screw.

Malleable iron. Swivel head on end of screw.			
Opens, inches..	2	3	4
Per dozen.....	\$2.25	4.00	6.00
Opens, inches..	5	6	8
Per dozen.....	\$7.00	8.75	11.00



## BENCH SCREWS AND CLAMP HEADS.

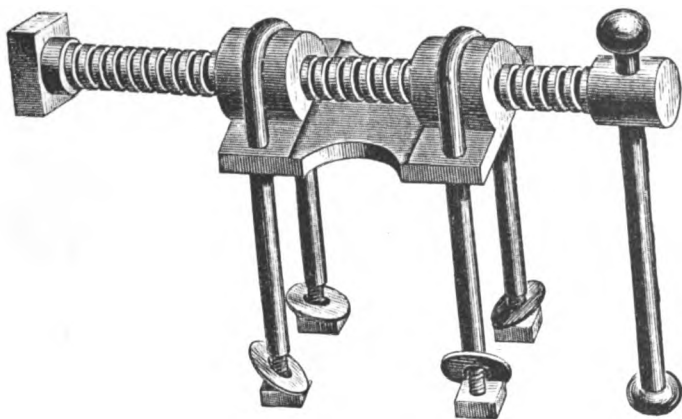
**WOOD BENCH SCREW.**



**Fig. 1421.**

2 inches diameter.....	per dozen, \$4.50
2½ " .....	" 5.00

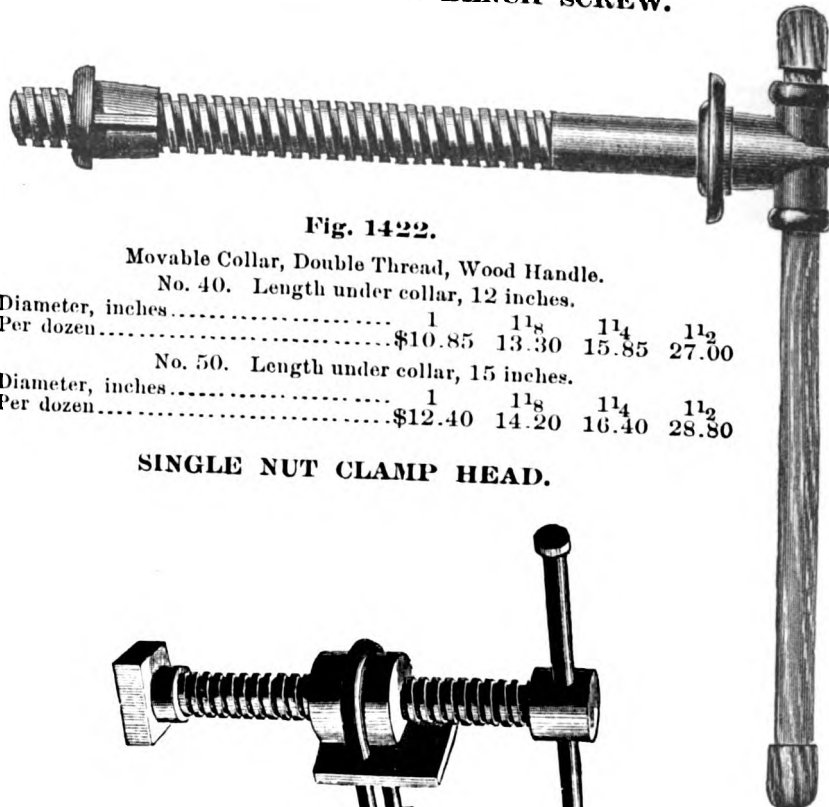
## DOUBLE NUT CLAMP HEAD.



**Fig. 1423.**

Wrought Screw, Double Thread, Iron Handle.			
Diameter of Screw, inches.....	1	1 <sup>1</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>
Per dozen.....	\$32.50	38.00	47.00

**WROUGHT IRON BENCH SCREW.**

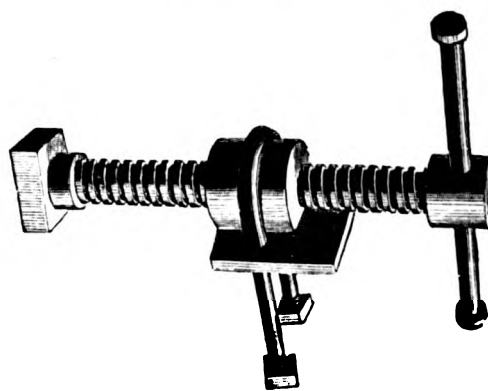


**Fig. 1422.**

Movable Collar, Double Thread, Wood Handle.  
No. 40. Length under collar, 12 inches.

No. 40. Length under collar, 12 inches.				
Diameter, inches.....	1	1 <sup>1</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>
Per dozen.....	\$10.85	13.30	15.85	27.00
No. 50. Length under collar, 15 inches.				
Diameter, inches.....	1	1 <sup>1</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>
Per dozen.....	\$12.40	14.20	16.40	28.80

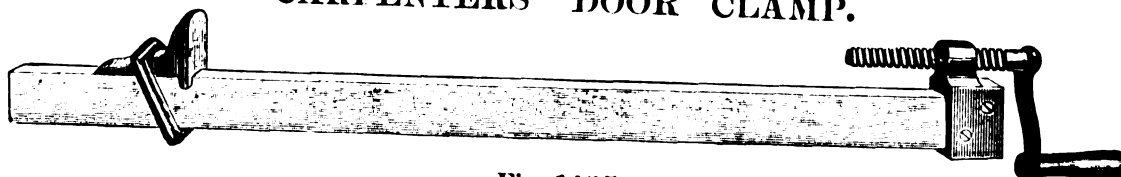
### SINGLE NUT CLAMP HEAD.



**Fig. 1424.**

Wrought Screw, Double Thread, Iron Handle.			
Diameter of Screw, inches.....	1	1 <sup>1</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>
Per dozen.....	\$24.50	33.50	37.50

## CARPENTERS' DOOR CLAMP.



**Fig. 1425.**

Door Clamps, complete with 4 foot sticks (as shown in cut)..... per dozen, \$36.50  
 Door Clamp Irons only, no sticks..... " 24.00

## UNIVERSAL HAND VISE.



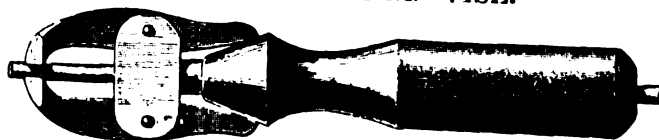
**Fig. 1426.**

Can be used in the hand, on a bench,  
in lathe or bit stock.

**Complete, as above..per doz., \$21.00**

## HAND VISES.

### IMPROVED HAND VISE.



**Fig. 1427.**

The jaws of this tool are of forged steel. There is a hole through the handle and screw for holding wire. Weight, 8 ounces.

Per dozen.....\$18.00

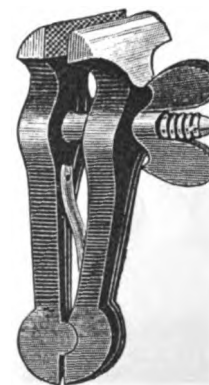
### Description, Universal Hand Vise.

**Fig. 1426.**

The jaws are of forged and tempered steel. The screw and cross bar are also made of steel. The handle is made of rosewood, with lignumvitis cap. It is hollow, and the bit shank and tools seen in the cut are placed inside. The blades bent at right angle are used for cutting washers.

The vise jaws are 1½ inches wide, and open 1½ inches. They will center and hold tools firmly of any shape. The cut of vise is one-third size, while the tools are about half size. The handle can be unscrewed from the vise and the bit shank put in its place, to be used with a bit brace for any kind of boring, drilling or cutting washers. The handle can also be screwed into the vise at right angles with its usual position, which is desirable for many kinds of work.

### PLAIN HAND VISE.



**Fig. 1428.**

**BLACK, BEST CAST STEEL.**  
 Sizes, ins. 3 to 4½ 5 5½ 6  
 Per doz... \$5.90 7.15 8.80 10.50

**BLACK, BEST CAST STEEL,  
HANDLED.**  
Sizes, ins. .... 3 to 4½ 5

TELEGRAPH VISES, WITH LOOP.  
Steel, with parallel jaws...each, \$2.50  
Vise Straps, best quality.. " 1.00

WENTWORTH SAW VISES.

Nos. 1 and 2.

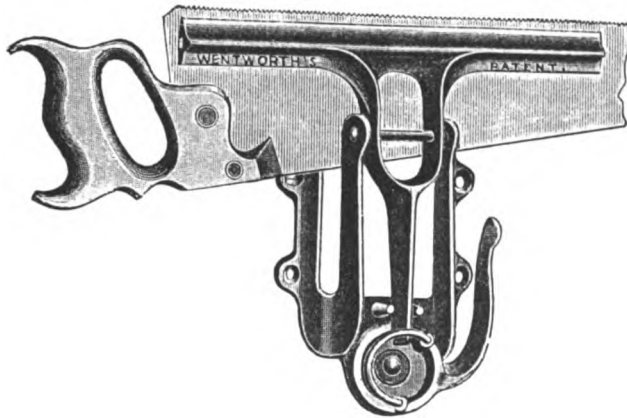


Fig. 1429.

These Vises have a flexible rubber cushion or muffler between the jaws which effectually prevents all vibrations, and renders saw filing noiseless.

No. 3.

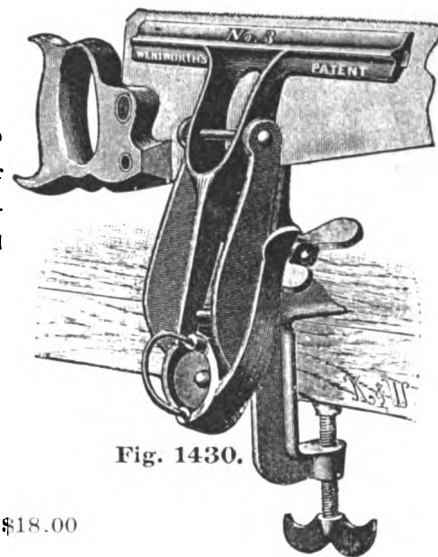


Fig. 1430.

WITH PLANED JAWS.

No. 1, 11 inch Jaws, Fig. 1429.....per doz., \$15.00  
" 2, 15 " " 1429..... " 21.00

WITH PLANED JAWS.

No. 3, 11 inch Jaws, Fig. 1430, with screw clamp for attaching to bench.....per doz., \$18.00

SAW VISES.

No. 100.



Fig. 1431.

No. 153.

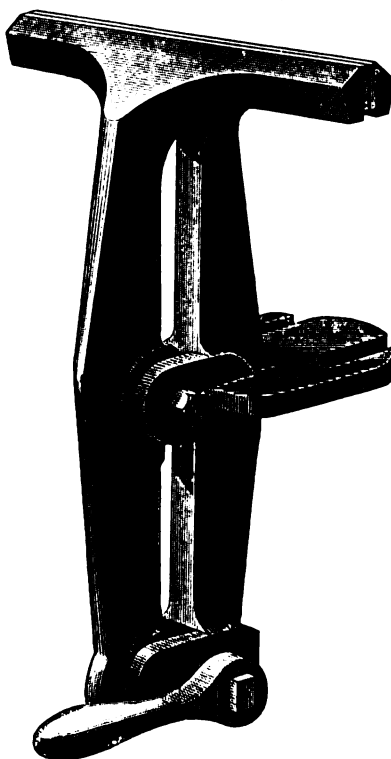


Fig. 1432.

No. 103.

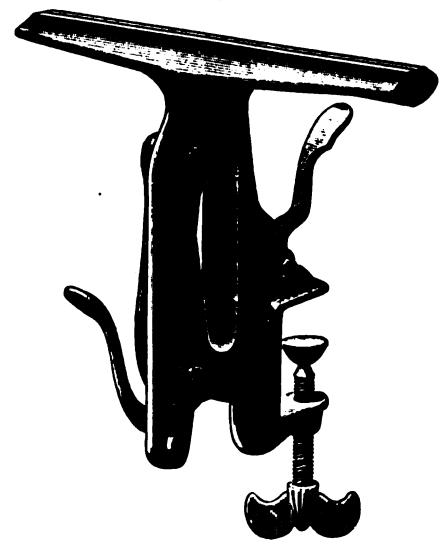


Fig. 1433.  
No. 104.

No. 105.

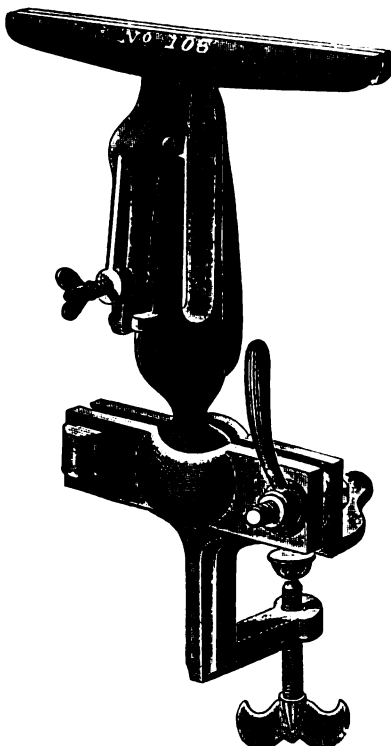


Fig. 1434.

Prices, Saw Vises, Figs. 1431 to 1435.

No. 100, Fig. 1431.

9 1/2 inch jaws, polished face.....per doz., \$20.00

No. 103, Fig. 1433.

9 1/2 inch jaws, polished face, with screw clamp, cam adjustment for holding vise at any angle..... per doz., \$32.00

No. 104, Fig. 1435.

9 1/2 inch jaws, planed jaws, with screw clamp, screw and lever adjustment for holding vise at any angle.....per doz., \$24.00

No. 105, Fig. 1434.

9 1/2 inch jaws, planed jaws, with screw clamp, ball and socket adjustment for holding vise at any angle..... per doz., \$38.00

No. 153, Fig. 1432.

inch jaws, leather faced, vise is extra large and heavy, weight 23 pounds each.....per doz., \$84.00

Fig. 1435.

## STEVENS' TOGGLE JOINT VISES.

### FLAT BASE VISE.

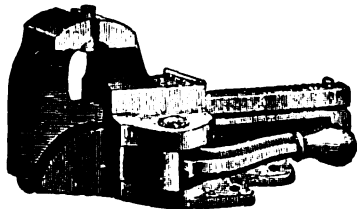


Fig. 1436.

The great advantage of this Vise is that the sliding jaw can be moved instantly in or out its whole length, and then securely set up to the work by means of the lever handle.

Nos.	Width of Jaws.	Steel Faced.	Solid Steel.	Opens.	Weight.
1	2 inches		\$3.75	2 1/4 ins.	2 lbs.
2	2 " Spring & Anvil		4.50	2 1/4 "	2 "
3	2 1/4 " " "	\$5.50	6.25	3 "	12 "
4	2 3/4 " Spring	6.00	6.75	3 "	12 "
5	3 1/2 " " "	9.00	10.50	5 "	35 "
6	4 1/2 " " "	12.50		6 1/2 "	60 "
7	5 1/2 " Exten. Handle	22.00		9 "	110 "
8	6 1/2 " " "	33.00		11 "	160 "

### SWIVEL BASE VISE.

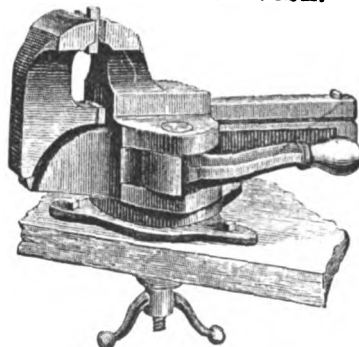


Fig. 1437.

Nos.	Width of Jaws.	Steel Faced.	Solid Steel.	Opens.	Weight.
20	2 inches	\$3.75	\$4.50	2 1/4 ins.	3 lbs.
21	2 " Spring & Anvil	4.50	5.25	2 1/4 "	3 "
22	2 1/4 " " "	6.50	7.25	3 "	14 "
23	2 3/4 " Spring	7.00	7.75	3 "	14 "
24	3 1/2 " " "	10.50	12.00	5 "	42 "
25	4 1/2 " " "	14.50		6 1/2 "	65 "
26	5 1/2 " Exten. Handle	26.00		9 "	120 "
27	6 1/2 " " "	39.00		11 "	175 "

### COACH MAKERS' VISE.

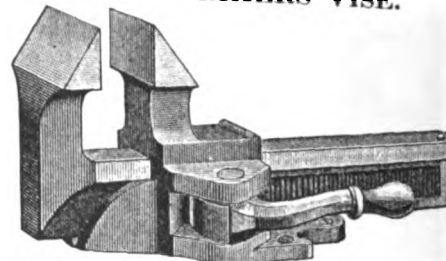


Fig. 1438.

No.	Width of Jaws.	Each.	Opens.	Weight.
34.	4 1/2 inches	\$12.50	12 inches	70 lbs.

### FILERS' VISES.

Same sizes and prices as the Swivel Base Vises, Fig. 1437.

### JEWELERS' VISES.

No.	1	2	inch jaws, flat base	each	\$3.75
"	12	2	" " with Anvil	"	4.25
"	20	2	" " swivel base	"	4.50
"	15	2	" " with Anvil	"	5.00

**NICKEL PLATED JEWELERS' VISES.**  
Same sizes as above. Add for nickel plating, \$2.00 per dozen.

## PRENTISS' PATENT ADJUSTABLE JAW VISES.

### MACHINISTS' VISE.

#### Flat Base.

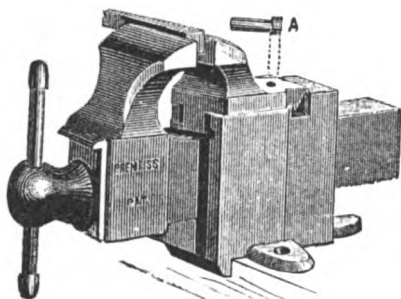


Fig. 1439.

### MACHINISTS' VISE.

#### Swivel Base.

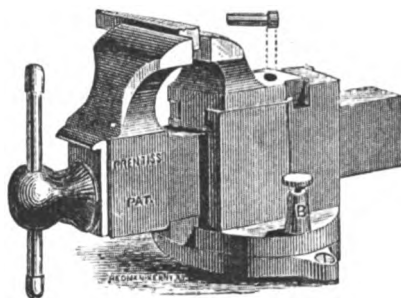


Fig. 1440.

### FILERS' VISE.

#### Flat Base.

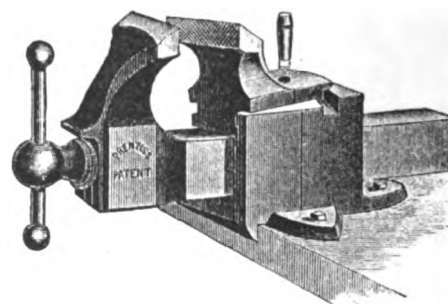


Fig. 1441.

The back jaw of the Prentiss Vise is adjustable, and in use conforms by automatic action to any angle, adjusts itself, and makes firm the object held, whether it be straight, beveled or wedge shaped. By inserting pin A the jaw becomes fixed, thus making a parallel solid jaw vise.

Width of Jaws.	Jaws Open.	Weight, Flat Base.	Weight, Swivel Base.	Flat Base, Each.	Swivel Base, Each.	Width of Jaws.	Jaws Open.	Weight, Flat Base.	Weight, Swivel Base.	Flat Base, Each.	Swivel Base, Each.
2 5/8 ins.	3 1/2 ins.	13 1/2 lbs.	17 lbs.	\$5.50	\$6.75	5 1/4 ins.	8 ins.	96 lbs.	109 lbs.	\$17.00	\$19.00
3 1/2 "	4 3/4 "	28 "	32 "	7.00	8.50	6 "	9 "	146 "	168 "	24.00	27.00
4 1/2 "	6 "	54 "	65 "	10.50	12.50	7 "	11 "	184 "	207 "	30.00	35.00

### FILERS' OR FINISHERS' VISES.

Flat Base, 4 in. jaws, opens 5 ins., weight, 32 lbs. .... each, \$8.00

Swivel Base, 4 in. jaws, opens 5 ins., weight, 36 lbs. .... each \$10.00

### JEWELERS' VISE.

#### Flat Base.

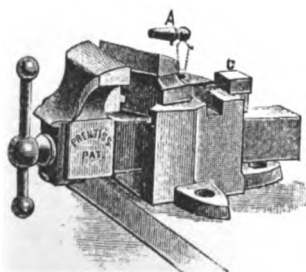


Fig. 1442.

### COACH MAKERS' VISE, SWIVEL BASE.

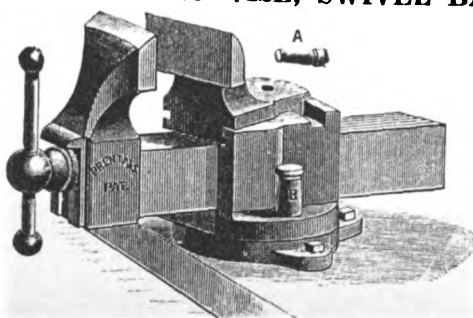


Fig. 1443.

### JEWELERS' VISE.

#### Swivel Base.

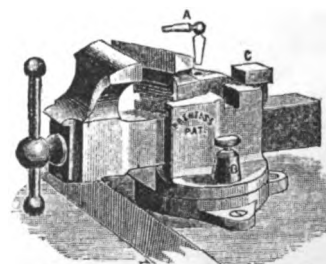


Fig. 1444.

### COACH MAKERS' VISES.

Width of Jaws.	Jaws Open.	Weight, Flat Base.	Weight, Swivel Base.	Flat Base, Each.	Swivel Base, Each.
3 1/2 ins.	7 ins.	30 lbs.	34 lbs.	\$8.00	\$9.50
4 1/2 "	9 1/2 "	59 "	67 "	11.00	13.00

### VISE CLAMPS FOR TABLE, BENCH OR VESSEL RAIL.

For Swivel Vises, inches.....	1 3/4	2	2 5/8	3 1/2	4 1/2	5 1/4
Each.....	\$0.75	.85	1.50	2.00	2.50	3.00

### JEWELERS' AND WATCH MAKERS' VISES.

Width of Jaws.	Jaws Open.	Weight, Flat Base.	Weight, Swivel Base.	Flat Base, Each.	Swivel Base, Each.
1 3/4 ins.	1 1/4 ins.	1 1/2 lbs.	2 lbs.	\$3.50	\$4.50
2 "	2 "	3 1/2 "	4 1/2 "	4.00	5.00

### PLATING JEWELERS' AND WATCH MAKERS' VISES.

Plating Vises, ins..	1 3/4	2	Plating Clamps for Vises.
Extra, each.....	\$2.25	\$2.50	Extra, each.....\$1.00

# IMPROVED PARALLEL VISES.

STATIONARY VISE.

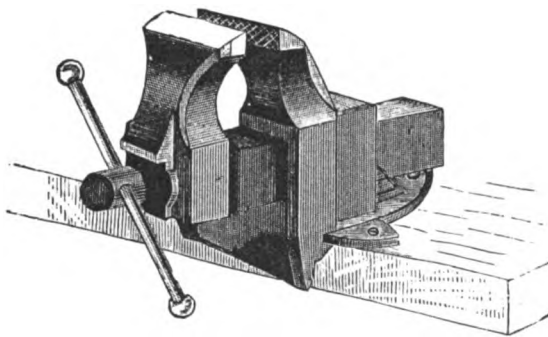


Fig. 1445.

Width of Jaws, inches.	2	2½	3	3½
Each	\$3.00	4.00	5.00	5.75
Width of Jaws, inches.	4	4½	5	6
Each	\$7.50	9.00	13.00	20.00

"BULL DOG" VISE.

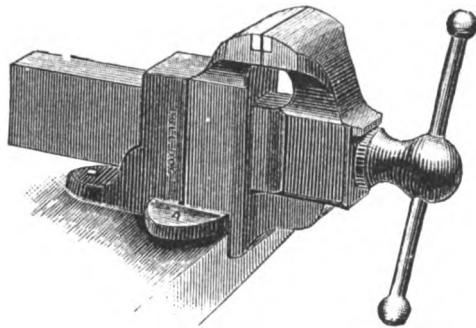


Fig. 1448.

The "Bull Dog" machinists' vises are well made, and of the best materials. The 8½ inch vise is the largest and heaviest chipping vise made for railroad and machine shops, etc.

Nos.	Width of Jaws.	Opens.	Each.
50	3¼ inches	4 inches	\$6.00
52	4½ "	5½ "	8.50
54	5 "	7 "	13.00
58	8½ "	12 "	50.00

SWIVEL VISE.

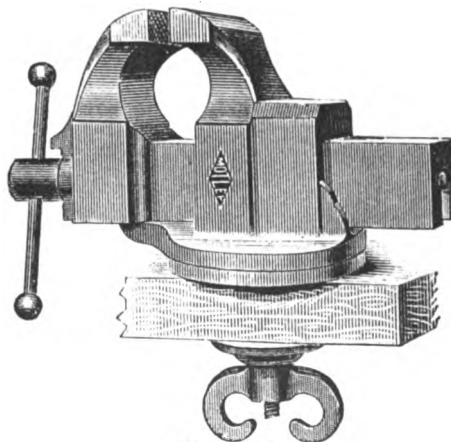


Fig. 1446.

Jaws, inches.	2	2½	3	3½	4	4½
Each	\$3.50	4.50	5.50	7.00	8.50	10.50

FARMER'S VISE.

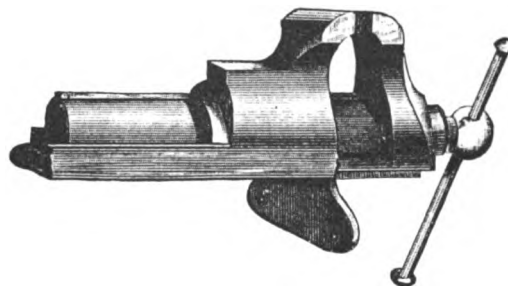


Fig. 1449.

Jaws, inches.	2	2½	3	3½	4	4½
Each	\$2.50	2.70	3.60	4.65	6.70	9.65

SWIVEL ATTACHMENTS  
For Bull Dog and Rapid Transit Vises, by means of which they may be changed to swivel base vises.

Prices, including Bolts and Nuts.			
For Vises.	Each.	For Vises.	Each.
Nos. 50 & 70	\$1.00	Nos. 72 & 73	\$1.75
" 52 & 71	1.50	" 54	2.00
		" 75	3.25
For Vise No. 58 ..... each, \$5.00			

COACH MAKERS' VISE.

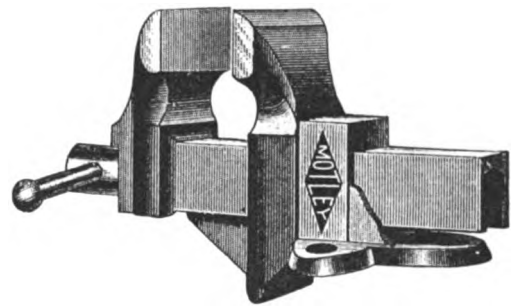


Fig. 1447.

Width of Jaws, 4 inches.	Opens 9 inches.
Flat Base (as per cut)	each, \$9.00
Swivel Base	" 10.00

RAPID TRANSIT VISE.

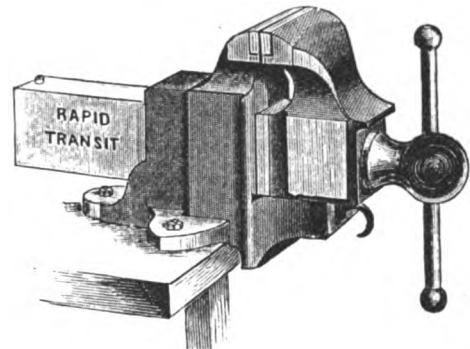


Fig. 1450.

By simply moving the hook under sliding jaw, this vise may be opened or closed full length, and the nut will engage the screw at any point.

Nos.	Width of Jaws.	Opens.	Each.
70	3 inches	3½ inches	\$6.50
71	3¾ "	4½ "	8.00
72	4½ "	5½ "	11.00
73	4¾ "	6½ "	13.50
74	5½ "	8 "	19.00
75	6½ "	9½ "	28.00

# PARKER'S PARALLEL VISES.

STATIONARY VISE.

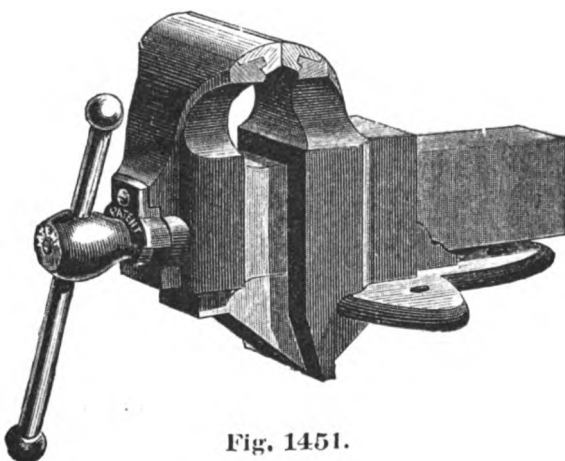


Fig. 1451.

Nos.	Width of Jaws.	Weight.	Each.
000	3¼ inches	23 pounds	\$6.25
1	3⅝ "	31½ "	7.00
2	4½ "	41½ "	9.00
3	4¾ "	59½ "	11.75
4	5⅝ "	83 "	16.25
5	6½ "	120 "	24.00
6	8½ "	237 "	50.00

All of these Vises are made with Parker's patent wrought iron strengthener in the sliding jaw.

SWIVEL VISE.

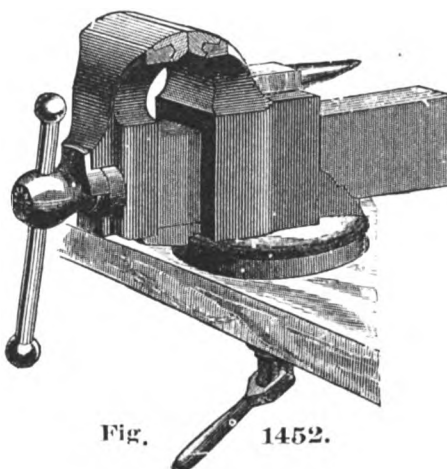


Fig. 1452.

Nos.	Width of Jaws.	Weight.	Each.
19	2 inches	8 pounds	\$4.00
20	2¼ "	8½ "	5.00
21	3½ "	23 "	7.00
22	3⅝ "	35 "	8.75
23	4½ "	48 "	11.00
24	4¾ "	63½ "	14.50
25	5⅝ "	90 "	20.50
26	6½ "	131 "	30.00

Nos. 23 to 26 do not have anvil as shown in cut.

SWIVEL JAW VISE.

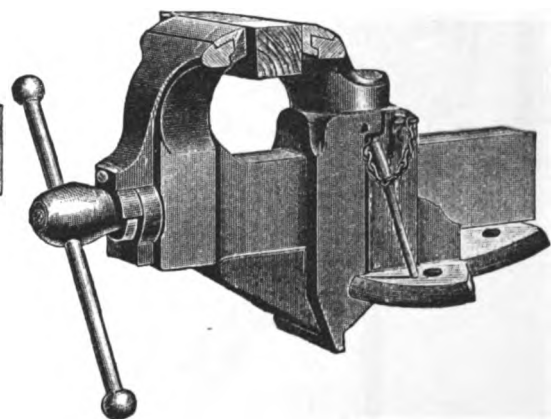


Fig. 1453.

Nos.	Width of Jaws.	Weight.	Each.
170	3¼ inches	26 pounds	\$6.50
171	3⅝ "	38 "	7.00
172	4½ "	57 "	10.50
173	4¾ "	80 "	14.00

SWIVEL JAW VISES, WITH SWIVEL BASES.			
Nos.	Width of Jaws.	Weight.	Each.
70	3¼ inches	30 pounds	\$7.00
71	3⅝ "	44 "	8.50
72	4½ "	66 "	12.50
73	4¾ "	90 "	16.00

## MACHINISTS' AND CHIPPING VISES.

## STATIONARY MACHINISTS' VISE.

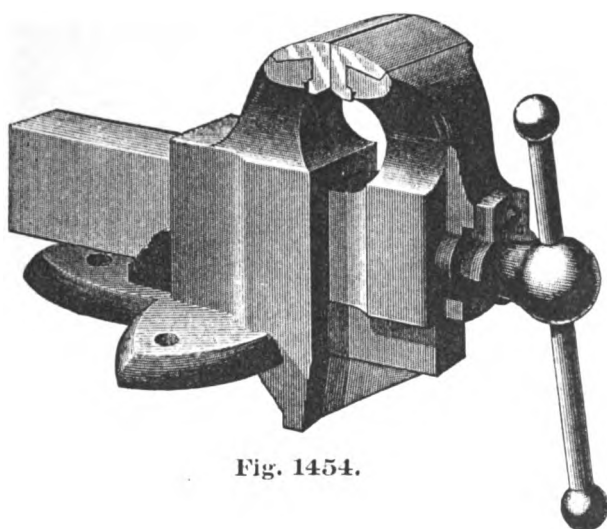


Fig. 1454.

This Vise is well made, of the best material and has heavy steel-faced jaws.

Nos.	Width of Jaws.	Diameter of Screw.	Weight	Each.
10	3 $\frac{1}{8}$ inches	$\frac{3}{4}$ inch	23 lbs.	\$13.00
11	3 $\frac{3}{4}$ "	$\frac{7}{8}$ "	34 $\frac{1}{2}$ "	14.50
12	4 $\frac{1}{8}$ "	1 "	42 $\frac{1}{2}$ "	18.75
13	4 $\frac{5}{8}$ "	1 "	59 $\frac{1}{2}$ "	24.50
14	5 $\frac{1}{4}$ "	1 $\frac{1}{8}$ "	78 $\frac{1}{2}$ "	34.00

## SAW FILERS' VISE.

No.	Width of Jaws.	Diameter of Screw.	Weight.	Each.
34	4 $\frac{1}{2}$ inches	$\frac{7}{8}$ inch	35 lbs.	\$15.00

## HEAVY CHIPPING VISE.

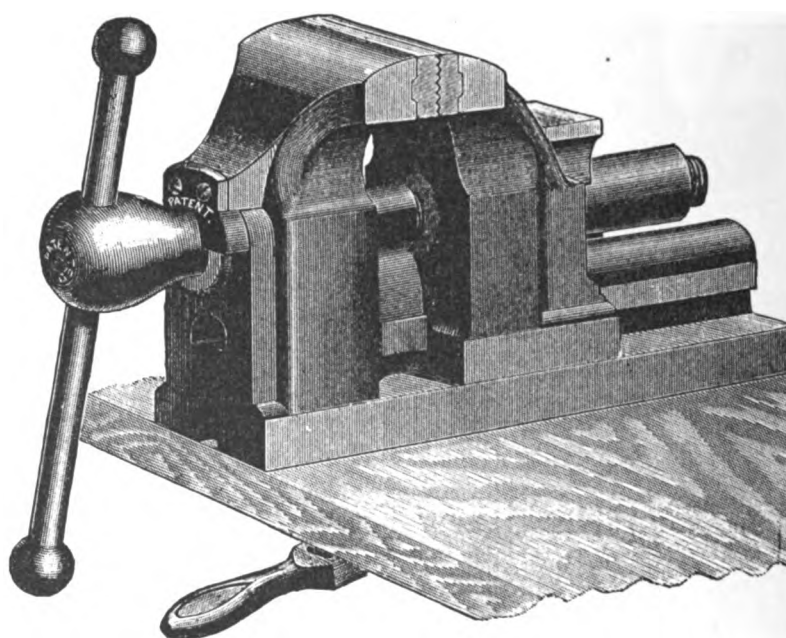


Fig. 1455.

This Vise is made very strong to allow chipping or filing without danger of breaking the Vise. The steel jaws are closely fitted and held by screws, so that after years of use new ones may be easily substituted. The screw is encased and thoroughly protected, and so located that the operator may obtain its full power.

Nos.	Width of Jaws.	Weight.	Each.
65	5 inches	80 lbs.	\$16.00
66	6 "	110 "	24.00

## SWIVEL MACHINISTS' VISE.

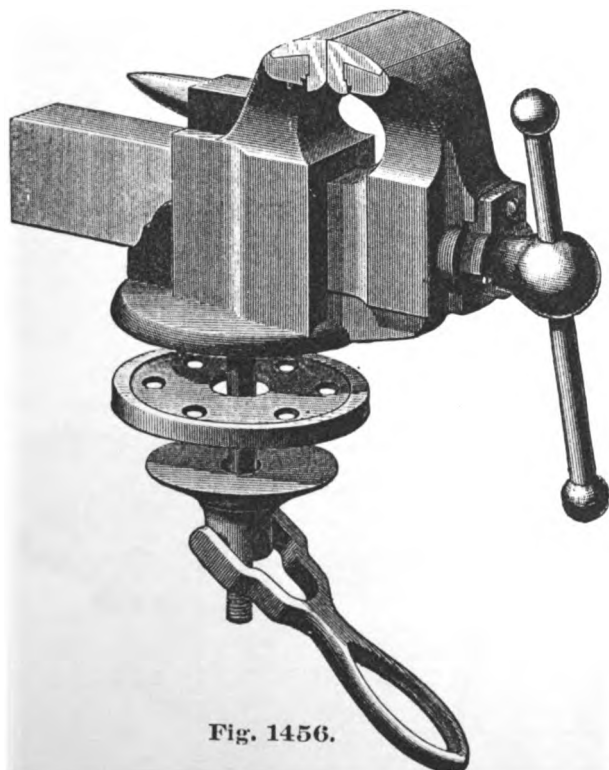


Fig. 1456.

Nos.	Width of Jaws.	Diam. of Screw.	Weight.	Each.
60	2 $\frac{1}{8}$ inches	$\frac{1}{2}$ inch	8 $\frac{1}{2}$ lbs.	\$8.30
61	2 $\frac{1}{2}$ "	$\frac{1}{2}$ "	8 $\frac{1}{2}$ "	10.50
62	3 $\frac{1}{8}$ "	$\frac{3}{4}$ "	25 "	14.50
63	3 $\frac{3}{4}$ "	$\frac{7}{8}$ "	35 "	18.25
64	4 $\frac{1}{4}$ "	1 "	50 "	23.00

No. 64 is without the anvil shown in cut.

## SAW FILERS' SWIVEL VISE.

No.	Width of Jaws.	Diam. of Screw.	Weight.	Each.
74	4 $\frac{1}{2}$ inches	$\frac{7}{8}$ inch	37 $\frac{1}{2}$ lbs.	\$18.25

## MERRILL'S SWIVEL VISE.

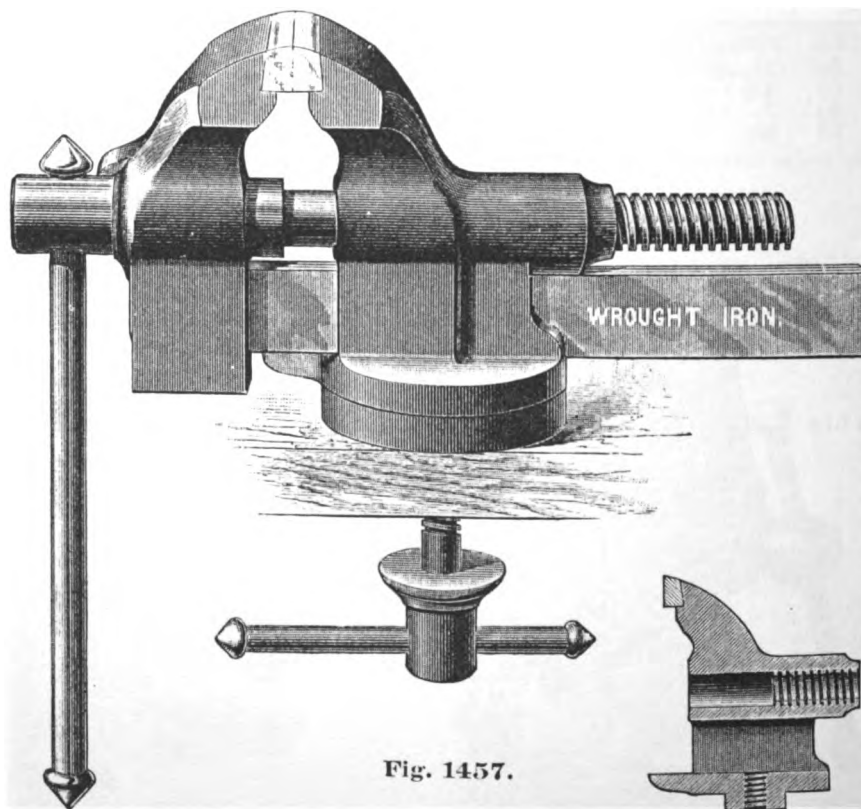


Fig. 1457.

This is a superior Chipping Vise, the jaws being extra heavy. The screws are large, with a strong square thread, and well fitted to the solid box. The sliding bar is wrought iron, carefully fitted. The steel jaws can be easily replaced when injured or worn out. Threaded part of box is extra long (see cut).

Width of Jaws.	Opens.	Size of Wrought Bar.	Diam. of Screw.	Weight.	Each.
4 ins.	8 ins.	2 $\frac{1}{4}$ ins. x 1 $\frac{1}{4}$ ins.	1 $\frac{1}{8}$ ins.	63 lbs.	\$11.00
5 "	9 "	2 $\frac{1}{4}$ " x 1 $\frac{1}{4}$ "	1 $\frac{3}{8}$ "	80 "	13.00
6 $\frac{1}{2}$ "	10 "	2 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ "	1 $\frac{5}{8}$ "	125 "	17.00
8 "	12 "	3 " x 1 $\frac{1}{2}$ "	1 $\frac{5}{8}$ "	165 "	22.00



# LEG VISES AND BOX SCREWS.

## SOLID BOX WROUGHT IRON VISE.

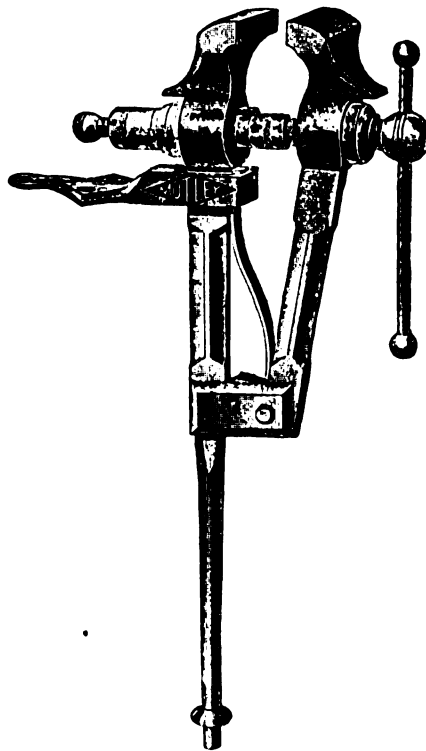


Fig. 1458.

This Vise is made of the very best material obtainable, and is fitted with wrought iron box and screw, with patent concave and convex washers, removing all liability of stripping the thread or breaking the screw.

## DOUBLE SCREW PARALLEL LEG VISE.

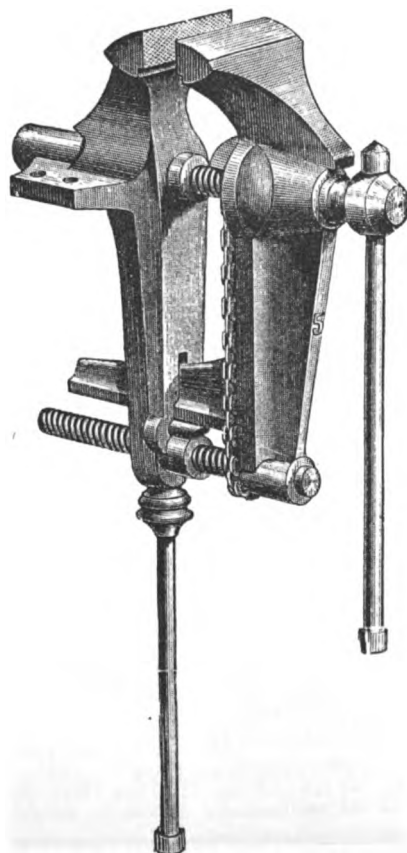


Fig. 1461.

## Prices, Solid Box Wrought Iron Vises.

Fig. 1458.

Nos.	Width of Jaws.	Each.	Nos.	Width of Jaws.	Each.
25	3 1/4 inches	\$12.00	100	6 inches	\$22.00
30	3 1/2 "	11.00	105	6 "	23.00
35	3 3/4 "	10.00	110	6 "	24.00
40	4 "	10.50	115	6 "	25.00
45	4 1/4 "	11.00	120	6 1/2 "	26.00
50	4 1/2 "	11.50	125	6 1/2 "	27.50
55	4 3/4 "	12.00	130	6 1/2 "	29.00
60	5 "	13.00	140	7 "	33.00
65	5 "	14.00	150	7 "	36.00
70	5 1/4 "	15.00	160	7 1/4 "	41.50
75	5 1/4 "	16.00	170	7 1/4 "	44.50
80	5 1/2 "	17.50	180	7 1/2 "	47.00
85	5 1/2 "	18.50	190	7 3/4 "	53.00
90	5 3/4 "	20.00	200	8 "	56.00
95	5 3/4 "	21.00			

With Anvil on Back Jaw, extra net.....each, \$0.25

The numbers used above indicate, as near as possible, the respective weights of vises.

## Prices, Swivel Solid Box Wrought Iron Vises.

Fig. 1459.

The Swivel Attachment is applied to Vises Nos. 35 to 150. For Swivel Attachment add to list of Vises, Fig. 1458,

Nos. 35 to 100, extra net.....each, \$1.00  
Nos. 110 to 150, extra net..... " 1.50

## SWIVEL SOLID BOX WROUGHT IRON VISE.

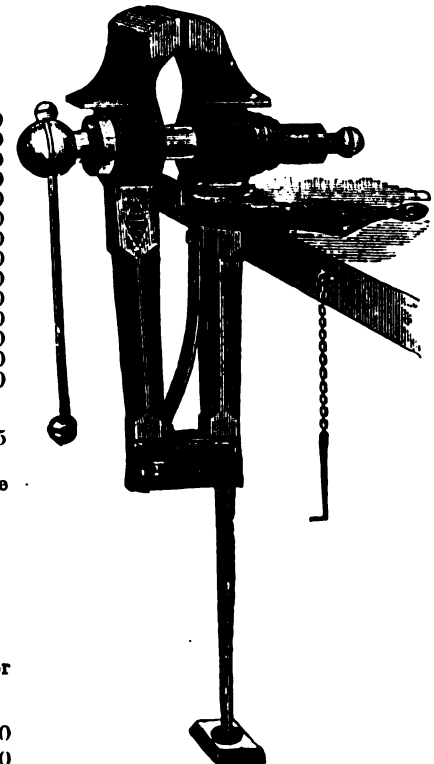


Fig. 1459.

This Vise has all the strength and stiffness of the regular Solid Box Vise, Fig. 1458, with the advantage of the swivel, which allows the Vise to be turned in any direction.

## WISE BOX AND SCREW.

With Patent Concave and Convex Washers.

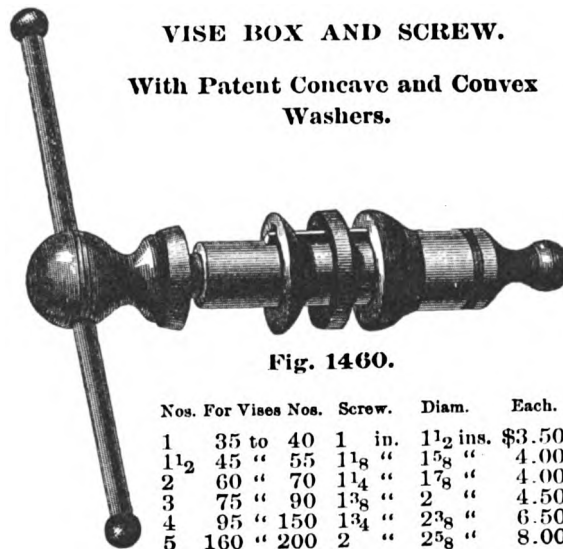


Fig. 1460.

Nos. For Vises	Nos.	Screw.	Diam.	Each.
1	35 to 40	1 in.	1 1/2 ins.	\$3.50
1 1/2	45 " 55	1 1/8 "	1 5/8 "	4.00
2	60 " 70	1 1/4 "	1 7/8 "	4.00
3	75 " 90	1 3/8 "	2 "	4.50
4	95 " 150	1 3/4 "	2 3/8 "	6.50
5	160 " 200	2 "	2 5/8 "	8.00

## Prices, Double Screw Parallel Leg Vises.

Fig. 1461.

Nos.	Weight.	Size of Jaws.	Opens.	Diam. of Screw.	Lever.	Each.
2	65 lbs.	4 1/2 ins. x 1 in.	5 1/2 ins.	1 1/8 ins.	13 ins.	\$10.50
3	90 "	5 1/4 " x 1 1/8 "	6 1/2 "	1 1/4 "	16 "	16.00
4	120 "	6 1/4 " x 1 1/4 "	7 1/2 "	1 1/2 "	19 "	20.50
5	150 "	7 " x 1 1/2 "	9 "	1 3/4 "	24 "	27.00
6	160 "	8 " x 1 1/2 "	10 "	1 3/4 "	26 "	30.00

No. 2 Vise being small does not have leg.

The jaws of these vises are of best tool cast steel, welded on, file cut and properly hardened. The screws are forged of the best refined iron, and work in solid cut thread boxes. The lower screw maintains the parallel position of the two jaws, by having exact motion with the upper working screw, through the connecting chain which regulates it.

The chain is very accurately made of steel links and rivets, and having no strain of the work upon it, is therefore as durable as all the other parts.

## Prices, Horse Shoers' Vises.

Fig. 1462.

Without anvil shown in cut.  
No. 65, width of jaw 5 inches.....each, \$19.50  
" 70, " 5 1/4 inches..... " 21.00  
With Anvil on back jaw, extra net..... " .50

## HORSE SHOERS' VISE AND ANVIL.

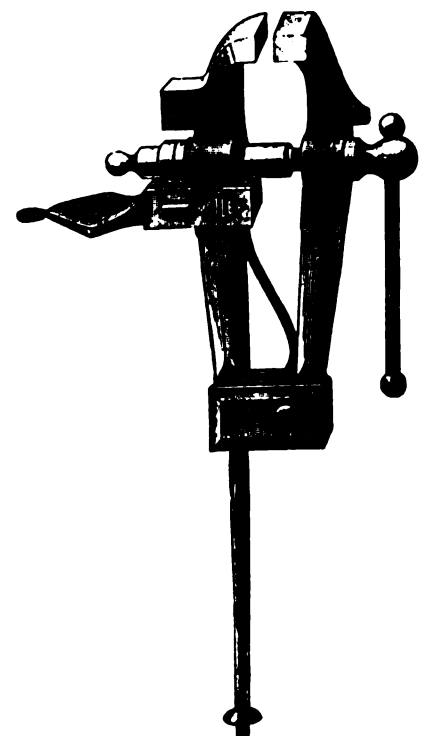


Fig. 1462.

This Vise is made especially for horse shoers' use, being extra strong, and with anvil at back of jaw.

## COLUMBIA FORGES.

THORNTON N. MOTLEY, SOLE AGENT.

No. 4 QUARTER HOOD.

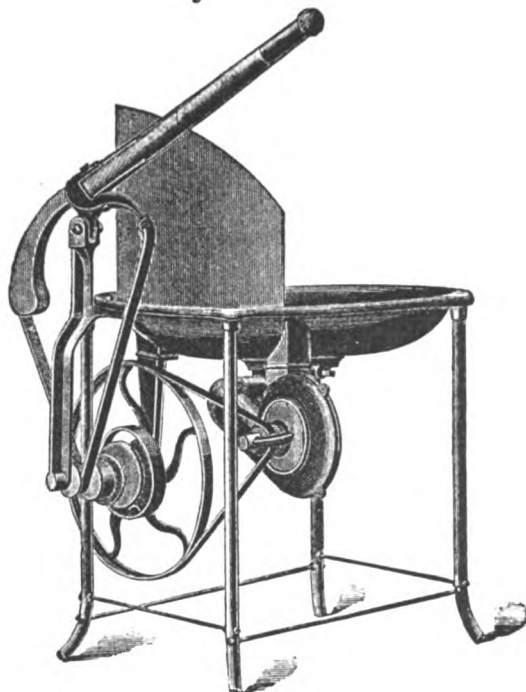


Fig. 1463.

Nos.	Height.	Size of Hearth.	Weight.	Each.
4	28 inches.	24 ins. x 30 ins.	130 lbs.	\$35.00
6	29½ "	21 ins. diam.	106 "	24.00

These Forges are made either lever or crank motion, as desired. No. 4 is a style most generally used. It has a large hearth, sufficient blast and works easily. For boiler makers, contractors, etc.

No. 1 HALF HOOD.

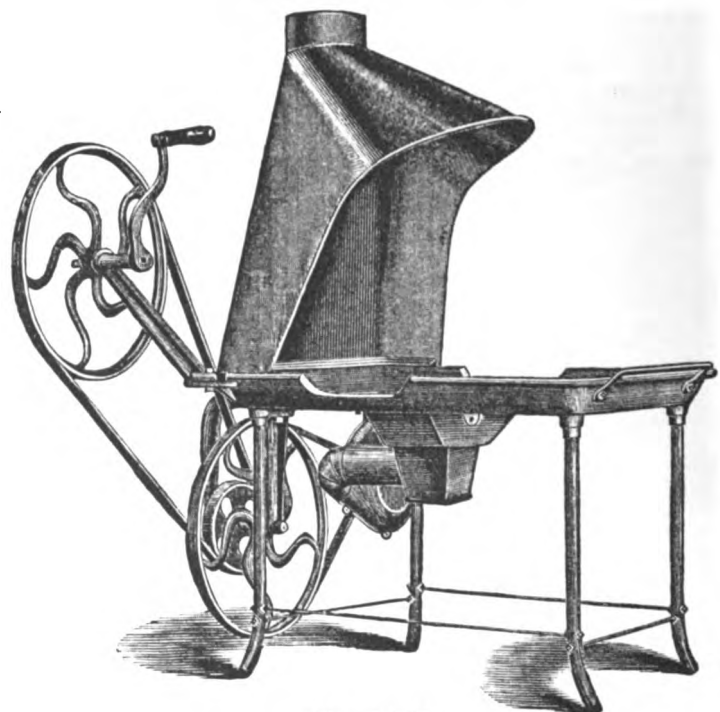


Fig. 1464.

No.	Height.	Size of Hearth.	Weight.	Each.
1	29 inches.	43 ins. x 30 ins.	260 lbs.	\$45.00
No. 1 Forge, complete with Water Tank ..... 50.00				

This Forge is made either lever or crank motion, as desired. It has very large hearth, and is especially designed for blacksmiths, to take the place of bellows and brick hearth.

No. 3 HALF HOOD.

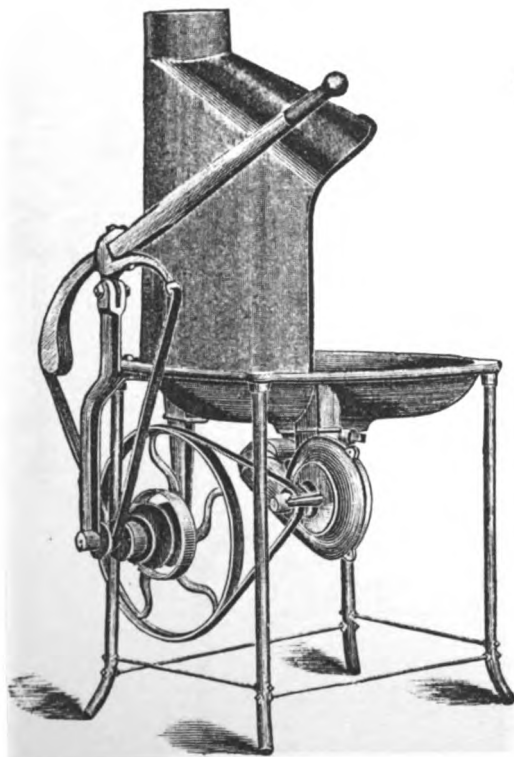


Fig. 1465.

Nos.	Height.	Size of Hearth.	Weight.	Each.
3	27½ ins.	24 ins. x 30 ins.	135 lbs.	\$36.00
7	30 "	21 ins. diam.	130 "	26.00

These Forges are made either lever or crank motion, as desired. No. 3 will produce a melting heat on iron 2½x3 inches in less than ten minutes. For machinists, railroad repair work, etc.

No. 5 QUARTER HOOD.

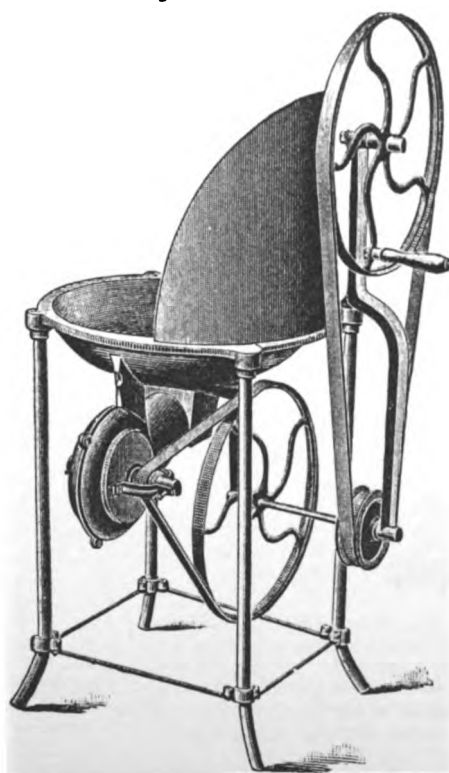


Fig. 1466.

No.	Height.	Size of Hearth.	Weight.	Each.
5	29½ ins.	21 ins. diam.	106 lbs.	\$24.00

The above cut represents the style of all the Columbia Forges with crank motion. The above forge is guaranteed to make more blast, and do it easier, than any forge of its size. Made either crank or lever motion.

No. 2 CLOSED HOOD.

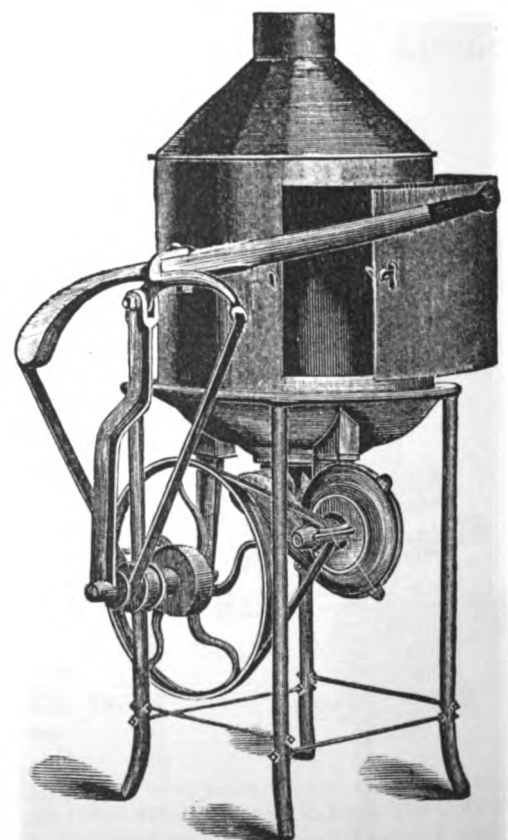


Fig. 1467.

Nos.	Height.	Size of Hearth.	Weight.	Each.
2	28 ins.	24 ins. x 30 ins.	145 lbs.	\$40.00
8	29½ "	21 ins. diam.	115 "	30.00

These Forges are made either lever or crank motion as desired. They have closed hood and tight fitting doors, which prevents sparks from escaping. For planing mills, ship builders, jewelers, etc.

## COLUMBIA AND BUFFALO FORGES.

## COLUMBIA FORGES.

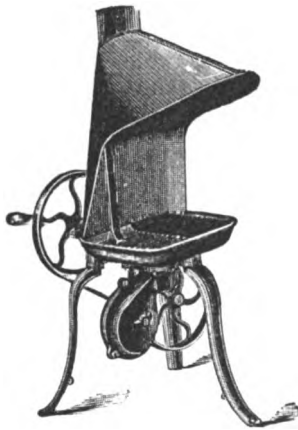
Bench Forge.  
No. 9 Half Hood.

Fig. 1468.

No. 9, size of hearth 10 ins. x 12 ins. each, \$18.00

This Forge is intended for jewelers, prospectors, miners and veterinary surgeons. It is easily handled and packed, and there is nothing about it to get out of order.

For heating and tempering rivets, tools or instruments it will be found perfectly satisfactory.

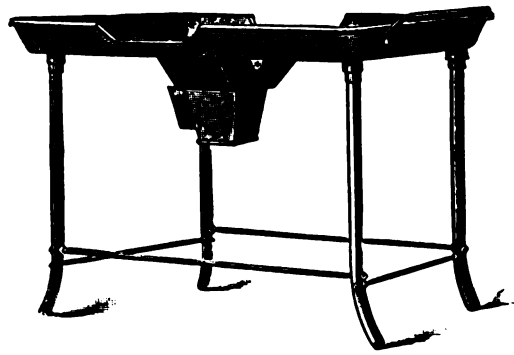
Stationary Blast Forge.  
No. 11.

Fig. 1469.

No.	Size of Hearth.	Weight.	Each.
11	42 ins. x 30 ins.	28 lbs.	\$20.00
No. 11 Forge, with water tank.....			
			24.00

These Forges are used in place of brick hearths, being ready to attach pipe for blower or bellows, or where stationary blast is used.

The water tank is fastened with a wrought iron clamp, and can be removed for cleaning.

BUFFALO FORGE.  
No. 3 Quarter Hood.

Fig. 1470.

No.	Height.	Size of Hearth.	Diam. of Fan.	Weight.	Each.
3	20 ins.	21 ins. x 27 ins.	10 ins.	130 lbs.	\$36.00

This Forge has four swinging handles, for convenience in moving about.

Intended especially for boiler makers, iron bridge and ship builders, railroads, tank builders, contractors, miners, etc.

It is peculiarly adapted to heating rivets.

## BUFFALO FORGES.

No. 1 Half Hood.

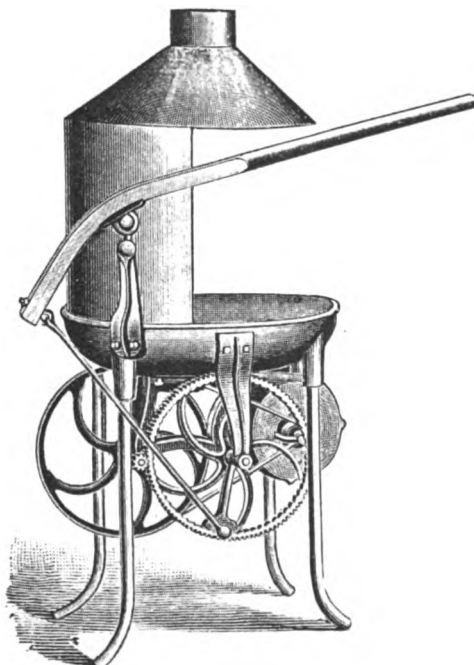


Fig. 1471.

No.	Height.	Size of Hearth.	Diam. of Fan.	Weight.	Each.
1	29 ins.	21 ins. x 27 ins.	10 ins.	140 lbs.	\$40.00

This Forge is guaranteed to produce a welding heat on 2½ to 3 inch iron in from five to ten minutes, and on heavier work if required.

It is especially adapted for all kinds of tool work, machinists, plumbers, miners, marble works, millers, railroad repair shops, locksmiths, etc.

No. 2 Closed Hood.

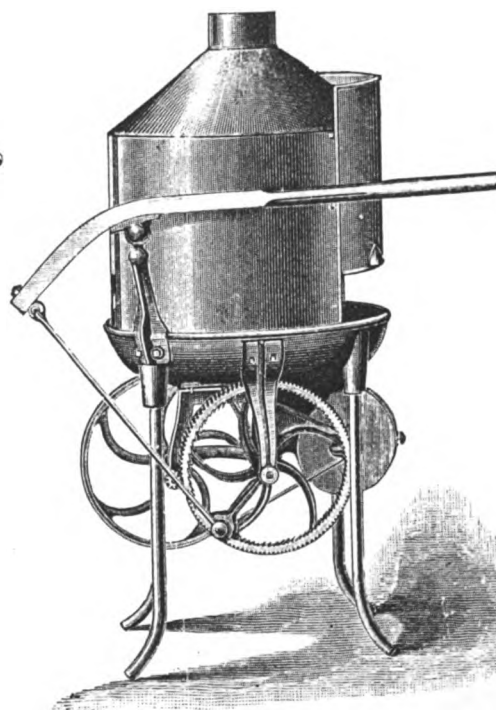


Fig. 1472.

No.	Height.	Size of Hearth.	Diam. of Fan.	Weight.	Each.
2	29 ins.	21 ins. x 27 ins.	10 ins.	150 lbs.	\$42.00

This Forge has closed hood, strongly made of sheet iron, completely enclosing the fire place, and having a large sliding door in front and small one in rear, for manipulating the fire, etc. The closed hood prevents the escape of sparks or fumes and smoke, and is especially adapted for planing mills, etc.

No. 0 Half Hood.

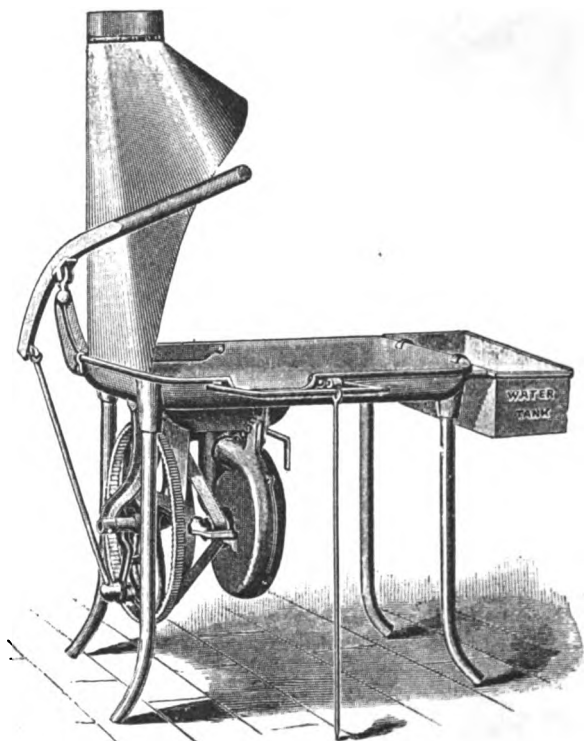


Fig. 1473.

No.	Height.	Size of Hearth.	Diam. of Fan.	Weight.	Each.
0	30 ins.	28 ins. x 40 ins.	14 ins.	250 lbs.	\$50.00
No. 0 Forge, with water tank, weight 300 lbs.....					54.00

This Forge is guaranteed to produce a welding heat on 3 inch iron in five minutes, on 4 inch iron in ten minutes. It is especially adapted for all kinds of heavy carriage and blacksmiths' work, having large fire pan and improved anti-clinker ball tuyere.

## BUFFALO FORGES.

No. 5 QUARTER HOOD.

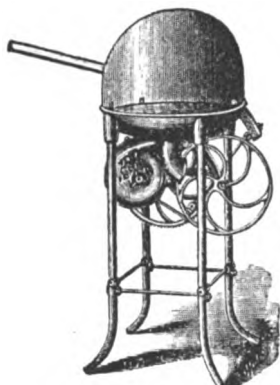


Fig. 1474.

No. 5, height, 33 ins.; diam. of hearth, 18 ins.; weight, 70 lbs.  
Each .....\$24.00

This Forge is light, strong and compact. Especially adapted for use of tank and elevated railroad builders, miners, prospectors, making repairs on boilers, bridges, etc.

No. 4 HALF HOOD.

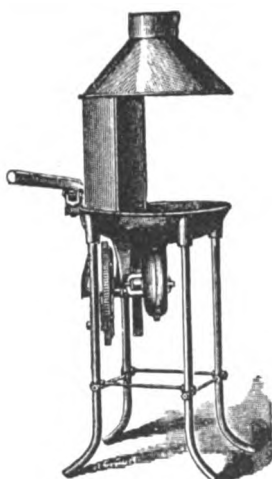


Fig. 1475.

No. 4, height, 33 ins.; diam. of hearth, 18 ins.; weight, 75 lbs.  
Each .....\$27.00

This Forge will produce a welding heat on 1½ inch iron in five minutes. It is especially adapted for use of die sinkers, model and tool makers, tin-smiths, jewelers, etc.

No. 6 CLOSED HOOD.

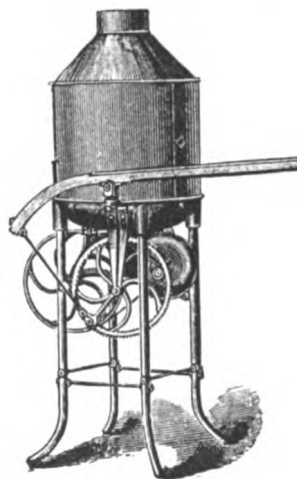


Fig. 1476.

No. 6, height, 33 ins.; diam. of hearth, 18 ins.; weight, 80 lbs.  
Each .....\$30.00

This Forge has closed hood, with large sliding door, thus preventing the escape of sparks or smoke when starting the fire. Adapted for cabinet makers, jewelers, planing mills, etc.

No. 10 QUARTER HOOD.



Fig. 1477.

No. 10, height, 32 ins.; diam. of hearth, 18 ins.; weight, 110 lbs.  
Each .....\$32.00

This Forge is especially adapted for railroad repair work, iron bridge and tank builders. All the machinery being protected by an iron drum, there is no danger of breaking or getting out of order.

## STURTEVANT FORGES.

No. 1 QUARTER HOOD.

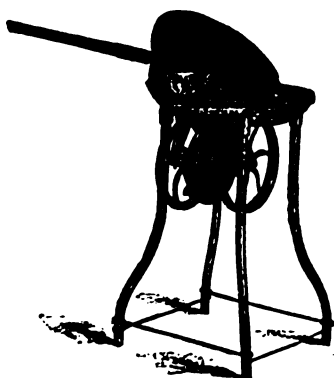


Fig. 1478.

No. 2 HALF HOOD.

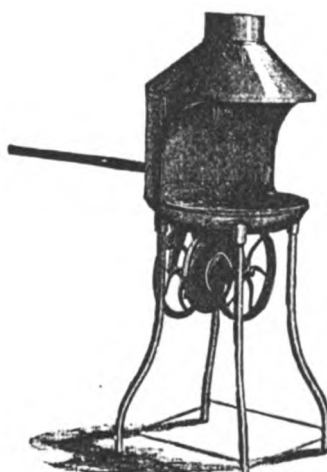


Fig. 1479.

No. 4 HALF HOOD.



Fig. 1480.

BLAST FORGE.

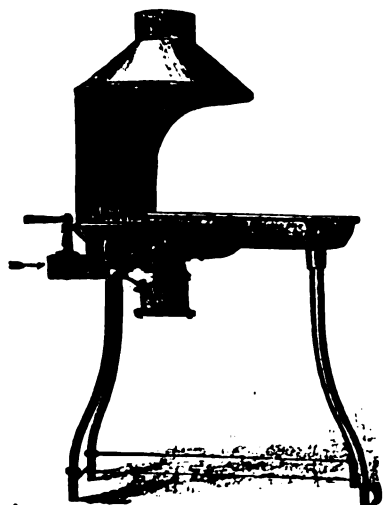


Fig. 1481.

## Description.

The blower in these forges is made in the same manner as the celebrated Sturtevant steel pressure blowers, having babitted journal boxes, steel shaft, galvanized steel blast wheel, and guaranteed to give stronger blast than any other wheel made. The hoods of these forges are made of sheet steel, in place of light sheet iron. The fire-pan has double thickness lined with asbestos, which prevents the heat from cracking the main pan or affecting the running gear.

## Prices, Hand Forges.

Nos.	Style of Hood.	Height of Forge.	Diameter of Pan.	Diameter of Blower.	Weight of Forge.	Each.
1	Quarter	33 ins.	21 ins.	10 ins.	117 lbs.	\$30.00
2	Half	33 "	21 "	10 "	127 "	32.00
3	Closed	33 "	21 "	10 "	140 "	34.00
4	Half	31 "	22 x 33 ins.	10 "	157 "	36.00
5	Half	31 "	26½ x 38½ "	10 "	173 "	38.00

## Prices, Blast Forges.

Nos.	Height.	Size of Pan.	Weight.	Each.
14	31 ins.	21 ins. x 33 ins.	145 lbs.	\$18.00
15	31 "	26½ " x 38½ "	160 "	20 00

## Price, Power Forge.

No.	Height.	Size of Pan.	Diam of Blower.	Weight.	Each.
24	31 ins.	22 ins. x 23 ins.	10 ins.	160 lbs.	\$30.00

POWER FORGE.

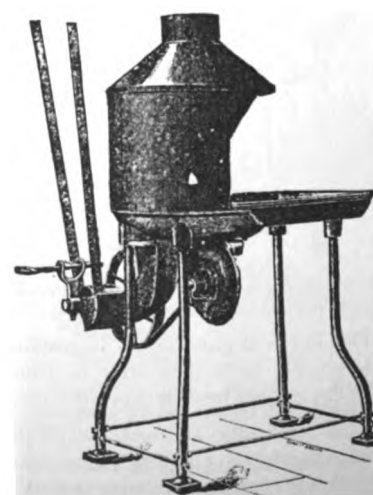


Fig. 1482.

# EMPIRE FORGES.

No. 12.  
With Cast Iron Hood.

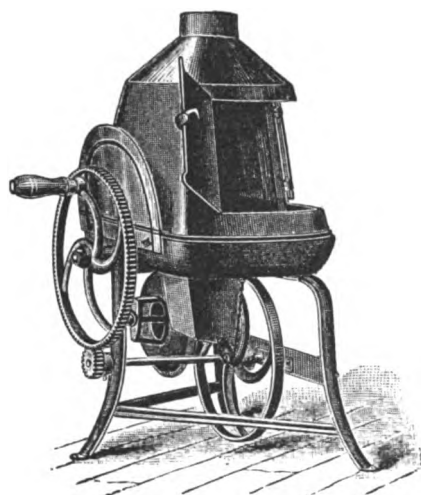


Fig. 1483.

Nos. 0, 1, 2 and 3.  
With Hood.

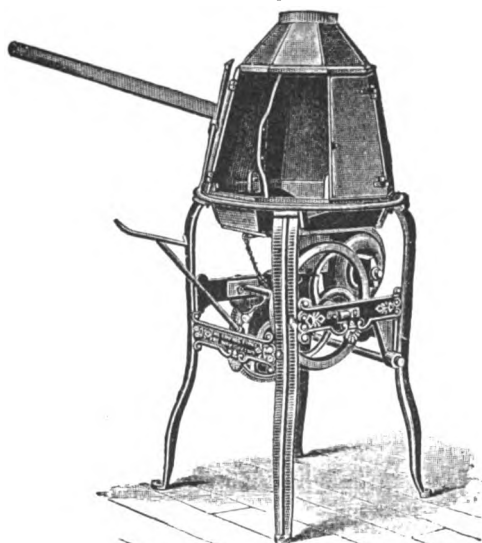


Fig. 1486.

Nos. 9 and 10.  
Without Hood.

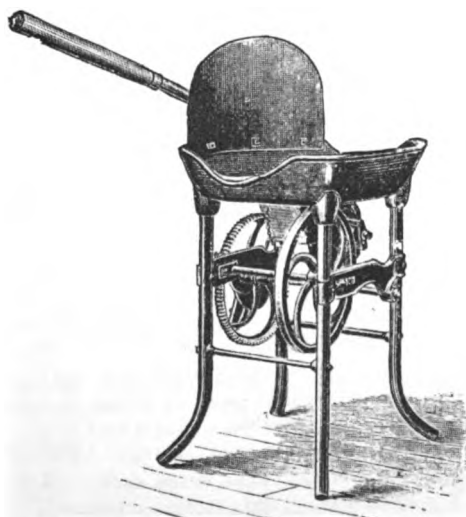


Fig. 1488.

No. 12.  
Without Hood.  
For Light Work.

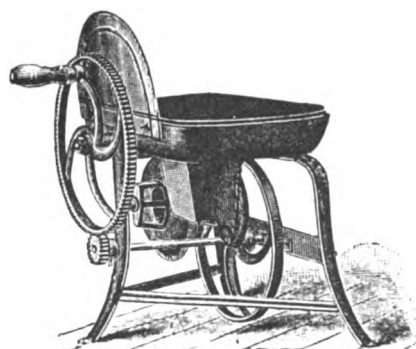


Fig. 1484.

## Description.

The Empire Forges are geared, and therefore have no belts. Shafts and pinions are of steel. Bearings are of bronze. There are no dead centers and no back motion.

## Price, Fig. 1483.

No. 12. With cast iron hood.					
Diam. of Fan.	Size of Hearth.	Height.	Weight.	Each.	
7 ins.	12 ins. x 17 ins.	28 ins.	70 lbs.	\$20.00	

## Prices, Fig. 1484.

No. 12. Without hood.					
Diam. of Fan.	Size of Hearth.	Height.	Weight.	Each.	
7 ins.	12 ins. x 17 ins.	15 ins.	50 lbs.	\$16.00	

No. 12½. With half open sheet iron hood.					
Same size as No. 12.....					each, \$18.00

## Prices, Fig. 1485.

Without hood, cast iron legs and back.					
Nos.	Diam. of Fan.	Size of Hearth.	Height.	Weight.	Each.
1	8 ins.	25 ins. diam.	42 ins.	140 lbs.	\$35.00
2	10 "	27 "	45 "	230 "	45.00

## Prices, Fig. 1486.

With hood, cast iron legs and hood.					
Nos.	Diam. of Fan.	Size of Hearth.	Height.	Weight.	Each.
0	8 ins.	22 ins. diam.	46 ins.	160 lbs.	\$35.00
1	8 "	25 "	48 "	170 "	40.00
2	10 "	27 "	51 "	270 "	50.00
3	10 "	31 "	54 "	285 "	60.00

## Prices, Fig. 1487.

For power, with hood, cast iron legs and hood.					
Nos.	Diam. of Fan.	Size of Hearth.	Height.	Weight.	Each.
2	10 ins.	27 ins. diam.	51 ins.	290 lbs.	\$55.00
3	10 "	31 "	54 "	300 "	65.00

## Prices, Fig. 1488.

Without hood, pipe legs, swivel handle.					
Nos.	Diam. of Fan.	Size of Hearth.	Height.	Weight.	Each.
9	10 ins.	21 ins. x 27 ins.	29 ins.	150 lbs.	\$36 00
10	8 "	17 ins. x 19 ins.	29 "	90 "	27.00

## Prices, Fig. 1489.

With half hood, pipe legs, swivel handle.					
Nos.	Diam. of Fan.	Size of Hearth.	Height.	Weight.	Each.
9	10 ins.	21 ins. x 27 ins.	29 ins.	160 lbs.	\$40.00
10	8 "	17 ins. x 19 ins.	29 "	110 "	30 00

## WATER TANKS.

For Forges Nos. 9 and 10 .....extra, each, \$4.00

## MINERS' FORGE.

This is the same size as No. 12 Forge, without hood, Fig. 1484, and is especially designed for miners and all purposes where a small forge is required for light repair work. Will heat 2 inch bar to welding heat.

Forges, size and weight as No. 12 .....each, \$20.00  
Boxes for Forge, with hinged lid..... " 4.00

Nos. 1 and 2.  
Without Hood.

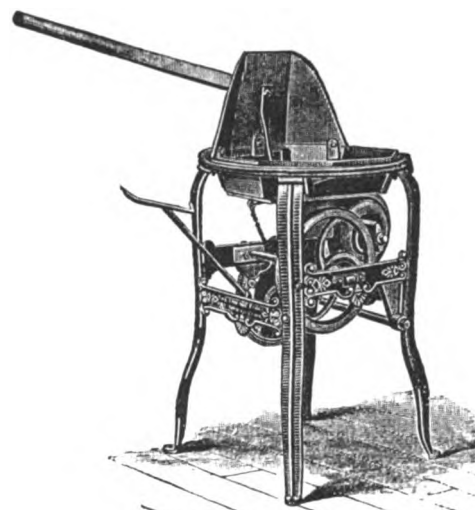


Fig. 1485.

Nos. 2 and 3, FOR POWER.  
With Hood.

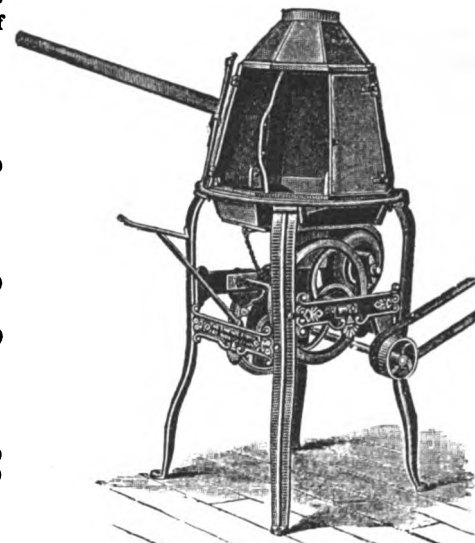


Fig. 1487.

Nos. 9 and 10.  
With Half Hood.

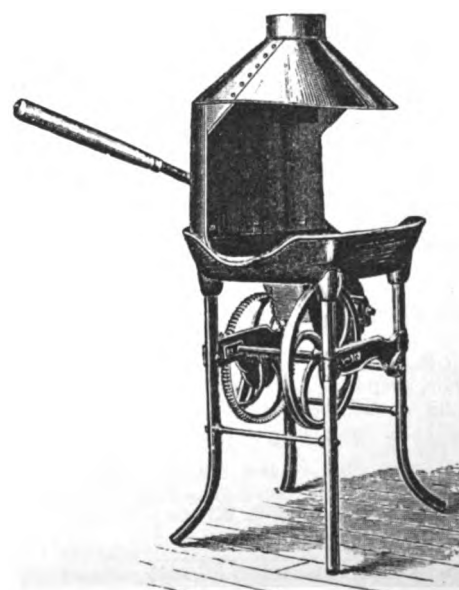


Fig. 1489.



## WESTERN FORGES.

No. 20.  
Without Hood.

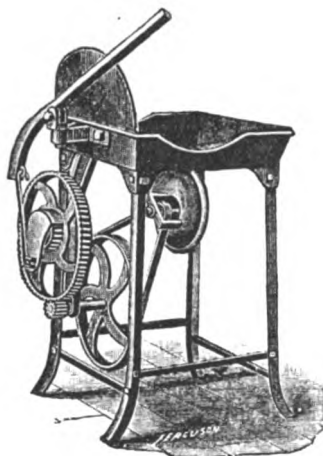


Fig. 1490.

Without hood, with angle iron legs, lever handle, deep fire pan, babbited bearings.

No. 20, diameter of fan, 7 ins.; size of pan, 15x19 ins.; height, 33 ins.; weight, 95 lbs.

Each ..... \$22.00

This forge is easily worked, very strong, and at the same time cheap. Being made with the new ratchet, it has a positive forward motion without dead centers.

No. 21.  
Half Hood.

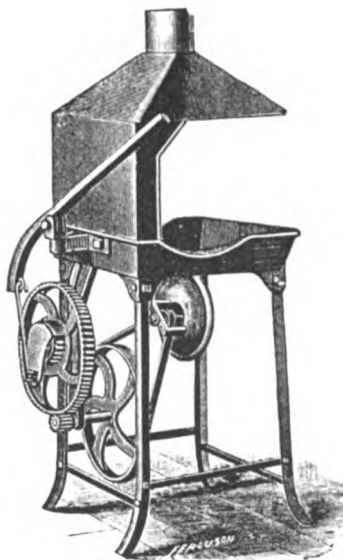


Fig. 1491.

With half hood, with angle iron legs, lever handle, deep fire pan, babbited bearings.

No. 21, diameter of fan, 7 ins.; size of pan, 15x19 ins.; height, 55 ins.; weight, 115 lbs.

Each ..... \$24.00

This forge is easily worked, very strong, and at the same time cheap. Being made with the new ratchet, it has a positive forward motion without dead centers.

Nos. 31 and 34.  
Half Hood.



Fig. 1492.

With half hood, with pipe legs, lever handle, deep fire pan, babbited bearings.

No. 31, diameter of fan, 10 ins.; size of pan, 21x27 ins.; height, 29 ins.; weight, 145 lbs.

Each ..... \$40.00

No. 34, diameter of fan, 8 ins.; diameter of pan, 18 ins.; height, 33 ins.; weight, 75 lbs.

Each ..... \$27.00

## WATER TANKS.

Iron Water Tanks for forges Nos. 31 and 34, extra.....each, \$4.00

Nos. 32 and 36.  
Closed Hood.

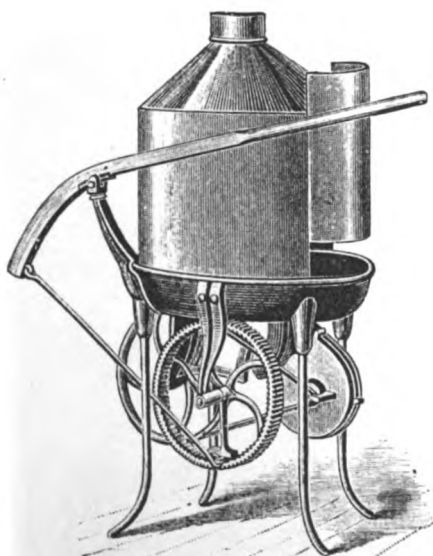


Fig. 1493.

Closed hood, with pipe legs, lever handle, deep fire pan, babbited bearings.

No. 32, diameter of fan, 10 ins.; size of pan, 21x27 ins.; height, 29 ins.; weight, 155 lbs.

Each ..... \$42.00

No. 36, diameter of fan, 8 ins.; diameter of pan, 18 ins.; height, 33 ins.; weight, 85 lbs.

Each ..... \$30.00

Water Tanks, extra ..... each, 4.00

For jewelers, planing mills, etc. Prevents sparks and fumes from the fire escaping.

No. 7.  
Half Hood.

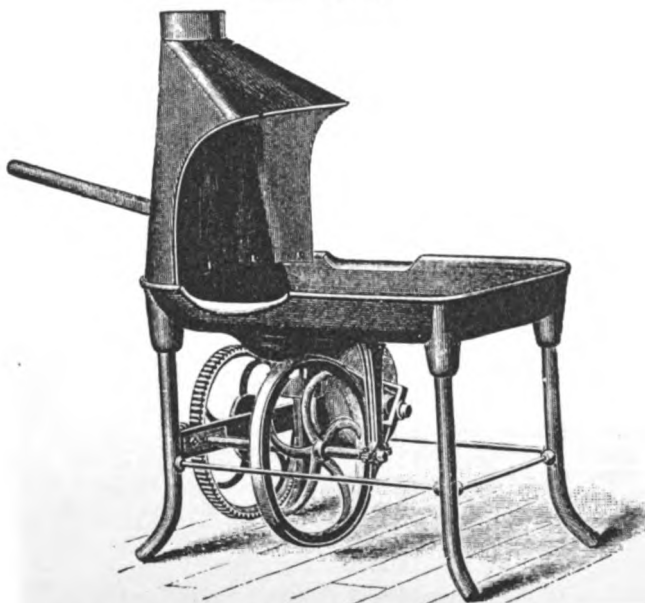


Fig. 1494.

With half hood, pipe legs, swivel handle.

No. 7, diameter of fan, 14 ins.; size of pan, 28x40 ins.; height of fire pan, 25 ins.; weight, 310 lbs.

For Hand, as per cut ..... each, \$50.00.

For Power, with pulleys ..... " 55.00

Water Tanks, extra ..... " 4.00

This forge will do as heavy work as the ordinary brick forge and large bellows, and readily produce welding heat on 3 or 4 inch iron.

No. 31 POWER.  
Half Hood.

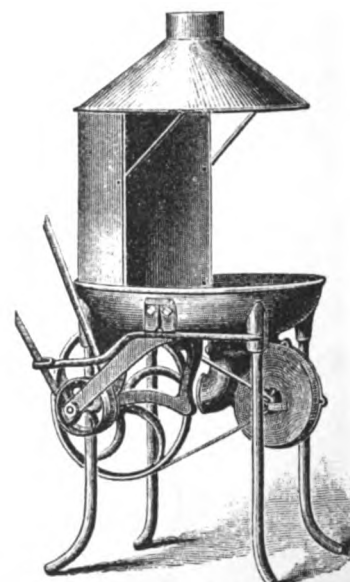


Fig. 1495.

With half hood, pipe legs, for power, complete with tight and loose pulleys.

No. 31, diameter of fan, 10 ins.; size of pan, 21x27 ins.; weight, 150 lbs.

Each ..... \$45.00

Water Tanks, extra, each... 4.00

For general shop work where power is used, and on a great variety of work will save labor of helper.

## STATIONARY FORGES.

### SMITHS' FORGE, FOR HAND AND POWER.

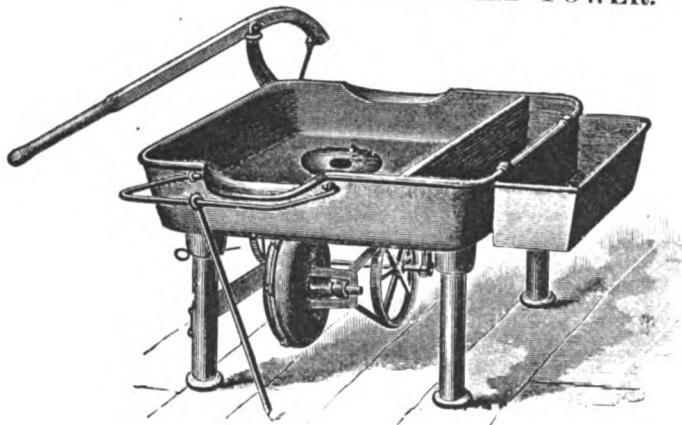


Fig. 1496.

Without hood, heavy pipe legs.

For blacksmiths, carriage makers, railroad shops, etc. Complete with coal box, water tank and blast gate.

No.	Height.	Size of Fire Pan.	Weight.	Each.
5	26 inches.	38 ins. x 51 ins.	500 lbs.	\$65.00

Canopy for forge, if desired.....extra, \$5.00

### BLAST FORGE, FOR POWER.

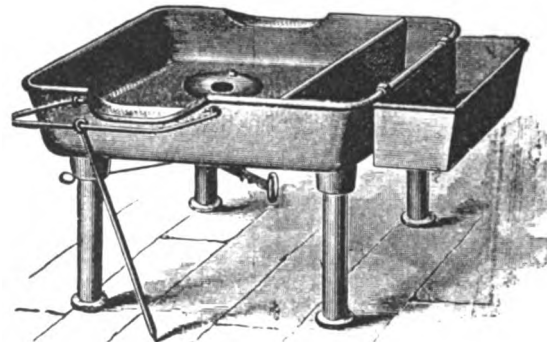


Fig. 1497.

Without hood, heavy pipe legs.

Designed for heavy work. Complete with coal box, water tank, tuyere and blast gate.

No.	Height.	Size of Fire Pan.	Weight.	Each.
6	26 inches.	38 ins. x 51 ins.	400 lbs.	\$40.00

For Power Blowers to use with this forge see page 188.

## HEATING FORGES.

For Hard Coal or Coke.

No. 3.

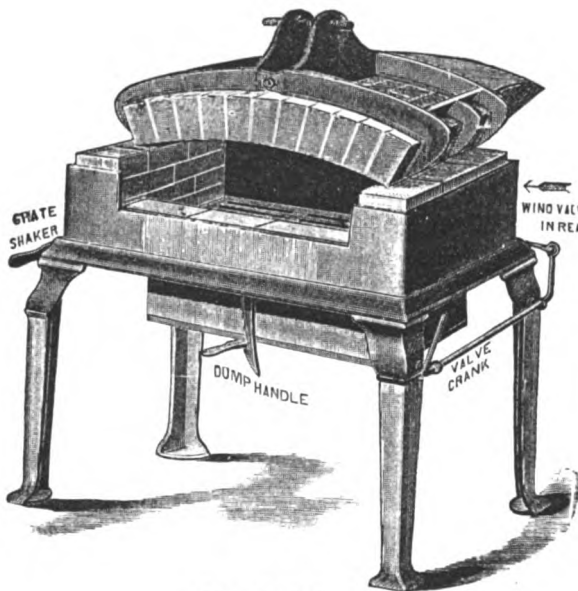


Fig. 1498.

No. 4.

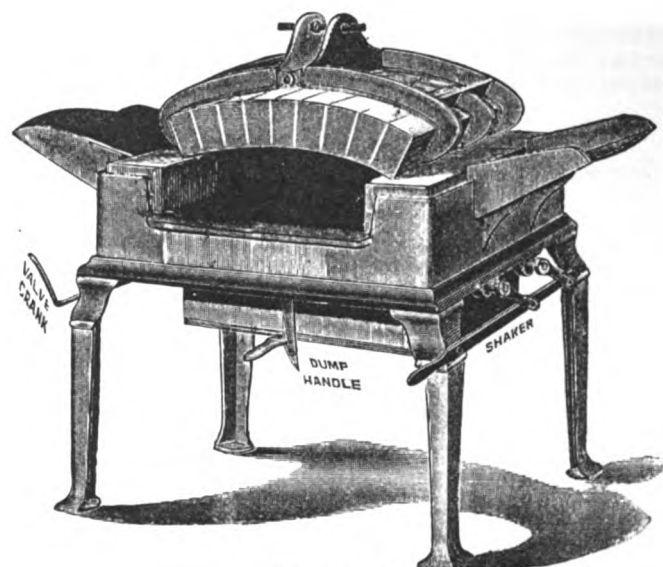


Fig. 1499.

These Forges are now furnished with the new patented adjustable top, which is far superior to anything of the kind made, and is the only device made that will hold the bricks securely to their places. Each forge is provided with a dumping device, also an air valve bolted securely to forge and well fitted for the regulation of the blast, all ready to attach the pipe. The blast is received into an air box, and from thence through several openings is equally distributed under the grates, making the pressure equal and giving an even fire.

Great care has been taken to have the forges constructed with regard to expansion and contraction, so that with extreme heat the castings do not warp or crack.

No. 1 has one grate, 7 x 9 inches, and is suitable for welding as well as heating light work.

No. 2 has one grate, 9 x 14 inches. This is the size best adapted for general use for all hammers for heating, and can be successfully used for welding.

No. 3 has one grate, 14 x 23 inches, and is intended for heating large and heavy work and irons for bending and forming. If required, it can be so arranged as to heat from the end instead of the side.

No. 4 has one grate, 9 x 19 inches. If required it can be so arranged as to heat from the end instead of the side.

No. 5 has two grates, each 9 x 20 inches, making total grate surface of 9 inches wide by 40 inches long. It can be worked from the ends or side.

In ordering forges Nos. 3, 4 and 5 please state whether wanted to be worked from sides or ends. Also state whether forges are wanted with or without brick. Brick is only sent when specially ordered.

### PRICES.

No. 1, complete, without brick, grate surface, 7 x 9 inches.....	\$30.00	No. 3, complete, without brick, grate surface 14 x 23 inches.....	\$55.00
" 2, " " " " 9 x 14 " .....	45.00	" 4, " " " " 9 x 19 " .....	55.00
No. 5, complete, without brick, grate surface, 9 x 40 inches.....	\$70.00		

## STURTEVANT BLOWERS AND EXHAUSTING FANS.

STEEL PRESSURE BLOWER.

MONOGRAM PATTERN BLOWER.

MONOGRAM EXHAUSTING FAN.

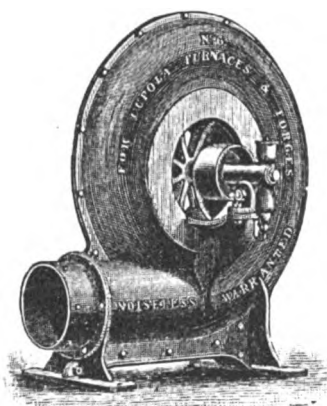


Fig. 1500.

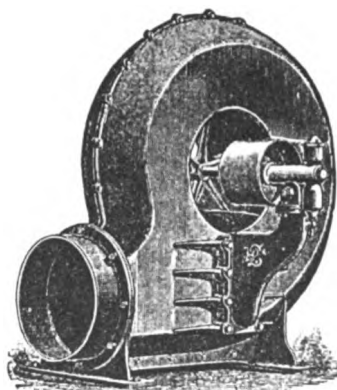


Fig. 1501.

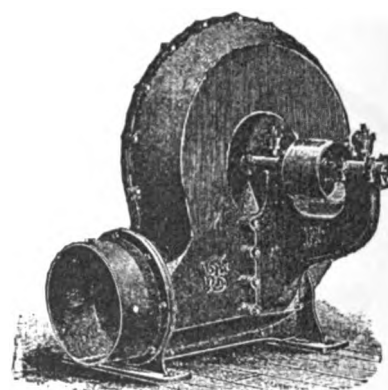


Fig. 1502.

## Prices, Steel Pressure Blowers, Fig. 1500.

Made expressly for iron foundries, and will produce a stronger blast with the same amount of power than any other blower.

Nos.	00	0	1	2	3	4	5	6	7	8	9	10
Diameter of Pulleys.....inches,	21 $\frac{1}{2}$	3	33 $\frac{3}{8}$	37 $\frac{3}{8}$	41 $\frac{1}{2}$	47 $\frac{3}{8}$	53 $\frac{1}{4}$	63 $\frac{1}{4}$	73 $\frac{1}{4}$	9	10	12
Face "....."	17 $\frac{3}{8}$	21 $\frac{1}{8}$	21 $\frac{1}{2}$	23 $\frac{1}{4}$	31 $\frac{3}{8}$	31 $\frac{1}{2}$	33 $\frac{1}{4}$	41 $\frac{1}{2}$	51 $\frac{1}{2}$	61 $\frac{3}{8}$	71 $\frac{1}{2}$	91 $\frac{1}{2}$
Diameter of Outlets.....	35 $\frac{3}{8}$	41 $\frac{1}{4}$	43 $\frac{1}{4}$	51 $\frac{1}{4}$	61 $\frac{3}{8}$	71 $\frac{1}{2}$	83 $\frac{1}{4}$	101 $\frac{1}{4}$	117 $\frac{3}{8}$	137 $\frac{3}{8}$	16	187 $\frac{3}{8}$
Each .....	\$20.00	26.00	36.00	41.00	55.00	70.00	90.00	115.00	180.00	225.00	325.00	450.00

## Prices, Monogram Blowers and Exhausting Fans.

No. of Blower or Exhauster.	Total Height, Inches.	Diameter of Inlet, Inches.	Diameter of Outlet, Inches.	Diameter of Pulley, Inches.	Face of Pulley, Inches.	Revolutions per minute, 2 oz. Blast for Boiler Fires.	Revolutions per minute, 4 oz. blast for Forge Fires.	Sq. ft. of Boiler Grate Surface supplied by Blower.	Each.
00	15	5	4	2 $\frac{3}{8}$	2	3000	4000	5	\$15.00
0	18	5 $\frac{3}{4}$	4 $\frac{3}{4}$	3	21 $\frac{1}{2}$	2600	3600	6	20.00
1	20	6 $\frac{1}{2}$	5 $\frac{3}{4}$	3 $\frac{1}{4}$	21 $\frac{1}{2}$	2300	3200	8	26.00
2	24	7 $\frac{1}{2}$	7 $\frac{1}{2}$	4 $\frac{1}{4}$	31 $\frac{1}{2}$	1928	2682	10	33.00
3	27	9	9	5 $\frac{1}{4}$	4	1638	2279	14	44.00
4	33	10 $\frac{1}{2}$	10 $\frac{1}{2}$	6	4 $\frac{3}{4}$	1410	1961	20	55.00
5	40	12	12	6 $\frac{1}{4}$	5 $\frac{1}{4}$	1194	1662	27	70.00
6	45	14	14	8	6 $\frac{1}{2}$	1018	1417	36	90.00
7	50	16	16	9	8	878	1234	48	150.00
8	57	18	18	10	9	766	1065	62	200.00
9	65	21	21	12	10 $\frac{1}{2}$	671	932	80	250.00
10	77	24	24	13 $\frac{1}{4}$	11 $\frac{1}{4}$	598	831	100	325.00

These Blowers and Exhausters are made either up blast or top horizontal blast when so ordered.

## STEEL PLATE EXHAUSTING FANS FOR PLANING MILLS.

Single Exhausters.

Double Exhauster.

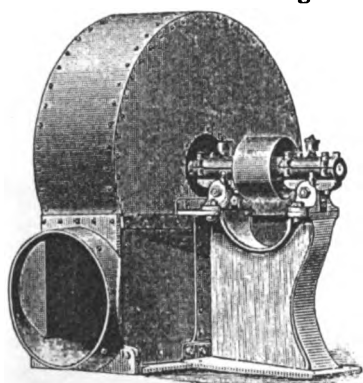


Fig. 1503.

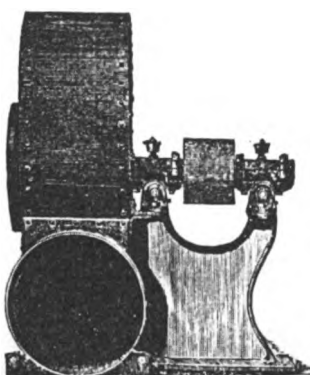


Fig. 1504.

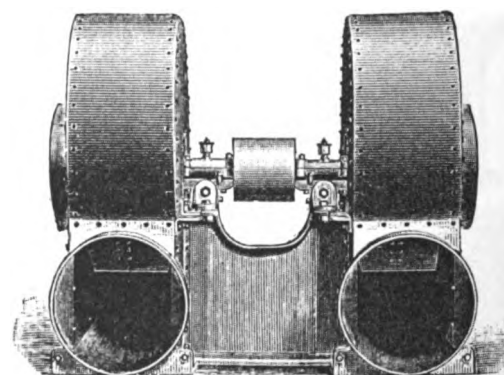


Fig. 1505.

The shells, wheels and shafts are of steel. The steel plate shells obviate all danger of breakage by blocks or knots passing through the Exhauster. The journal boxes are the improved Brush Oiler pattern, and, together with the spindles, are finished in the best manner, which insures running constantly at high speed without heating.

Sizes Height of Shell, Inches.	Diameter of Inlets, Inches.	Diameter of Outlet, Inches.	Sizes of Pulleys, Single Exhausters. Diameter.	Face.	Sizes of Pulleys, Double Exhausters. Diameter.	Face.	Speed for Ordinary Work, Rev. per min.	Speed for Heavy Work, Rev. per min.	Single Exhausters, Each.	Double Exhausters, Each.
30	11 $\frac{1}{4}$	11 $\frac{1}{4}$	5 $\frac{1}{4}$ ins.	41 $\frac{1}{2}$ ins.	6 ins.	6 ins.	2200	2600	\$14.00	\$80.00
35	13 $\frac{1}{4}$	13 $\frac{1}{4}$	6 "	51 $\frac{1}{2}$ "	7 "	7 "	1800	2200	55.00	90.00
40	15	15	6 $\frac{3}{4}$ "	61 $\frac{1}{2}$ "	8 "	8 "	1600	1900	70.00	115.00
50	19	19	8 $\frac{1}{2}$ "	71 $\frac{1}{2}$ "	10 "	10 $\frac{1}{2}$ "	1300	1550	90.00	150.00
60	22 $\frac{1}{2}$	22 $\frac{1}{2}$	10 $\frac{1}{4}$ "	81 $\frac{1}{2}$ "	12 "	11 $\frac{1}{2}$ "	1100	1250	115.00	200.00
70	26	26	12 "	91 $\frac{1}{2}$ "			950	1100	150.00	
80	30	30	14 "	121 $\frac{1}{2}$ "			800	950	200.00	

Single or Double Exhausters are made up discharge, or top horizontal discharge when so ordered.

## BLAST GATES.

For opening and closing pipes which supply blast to furnaces, forges, etc.

Sizes, inches.....	11 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3	4	5	6	8	10	12	14	15	16	18	20	24
Price, each.....	\$1.00	1.25	1.50	1.75	2.00	2.75	3.50	4.50	6.00	8.00	10.00	12.00	15.00	18.00	20.00	

The 1 $\frac{1}{2}$  to 4 inch are made of composition metal, the other sizes of iron.

## COLUMBIA HAND BLOWERS.

THORNTON N. MOTLEY, SOLE AGENT.

## HURRICANE.

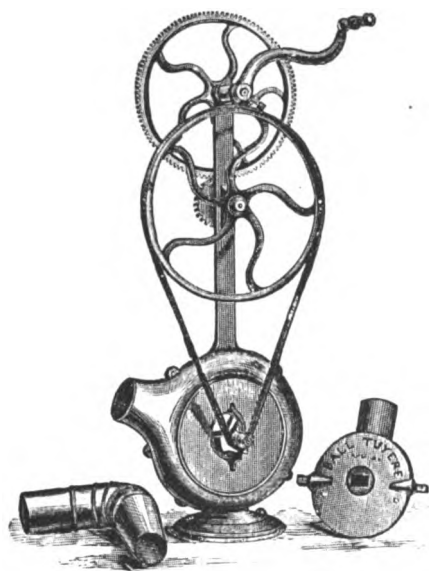


Fig. 1506.

Complete, with ball tuyere iron...each, \$18.00

The Hurricane is a strong, compact and effective blower, with power sufficient for all ordinary blacksmith work. The gears are from machine-cut patterns, and work perfectly.

## Columbia Ball Tuyere Iron.

Weight, 25 lbs.; has a 3 inch opening for the air to pass in; is provided with a revolving ball on top to regulate blast, and a slide at the bottom to allow the ashes to drop out.

Guaranteed to work with any blower or bellows when properly adjusted.

Each.....\$2.50

## LEVER.

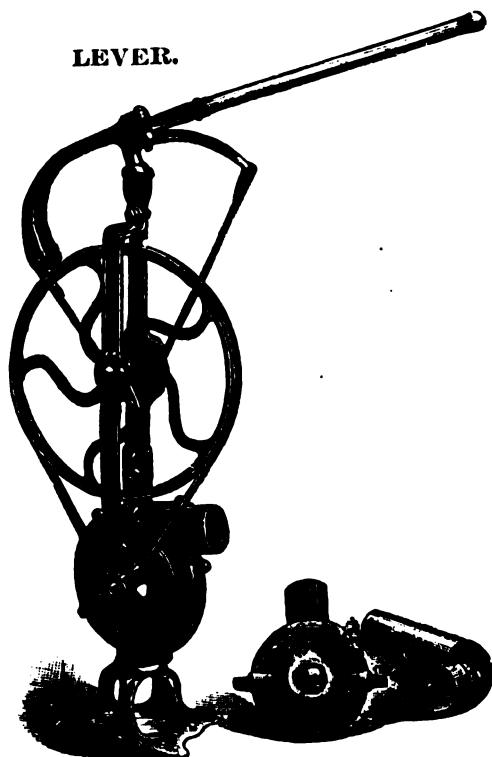


Fig. 1509.

Height, 52 ins.; weight, 93 lbs.; diameter of fan case, 14 ins.; complete with ball tuyere iron.  
Each.....\$20.00

## PEERLESS.

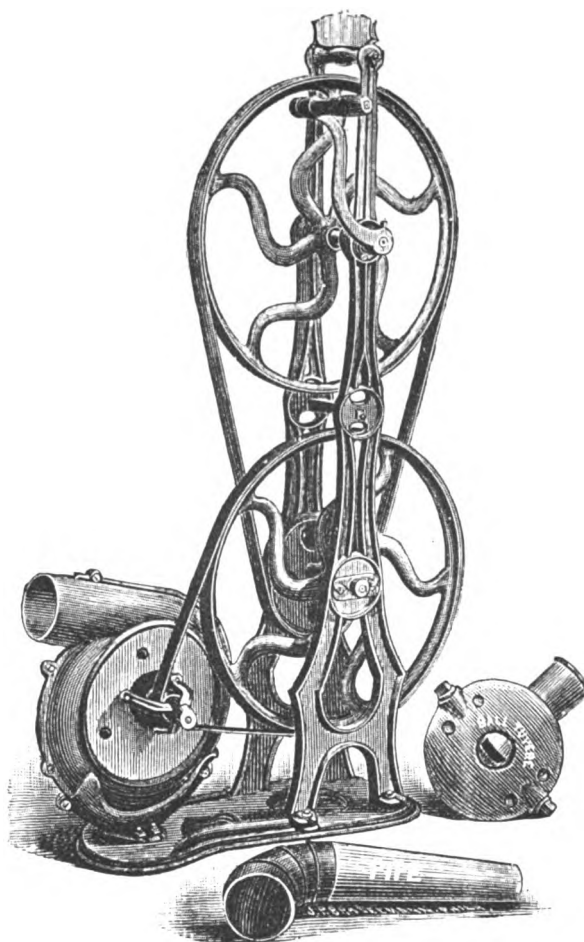


Fig. 1507.

Complete, with ball tuyere iron.....each, \$20.00

To any one buying this blower, I guarantee to keep it in order for five years, careless handling excepted.

## Description Lever Blower.

Fig. 1509.

This blower is all iron except the handle and belt. The motion is applied by a steel band and lever, which clamps on the outside of hub to fly-wheel, and is applied only when working the lever, releasing itself as soon as the downward stroke is completed. No dead center to overcome. The lever rotates several feet each way, same as a bellows pole. There are no balls, ratchets or leather devices used, and the frame being all iron it will not rack, burn or rot out, or get out of shape.

## Description Buffalo Blower.

Fig. 1510.

This blower is made either right or left hand, and is adapted for general blacksmiths' use. It has a swivel wood lever. The fly-wheel revolves on a dead or fixed shaft. The impact is given to fly-wheel by means of a number of pawls pivoted to the plate, having a pinion engaged by the segment-wheel shown in cut. The fly-wheel is enabled to make many revolutions by one single pressure of the handle, which will allow keeping the fan in motion without fatigue and give plenty of time between strokes to handle the iron operated upon, without abating the blast.

## GEM.



Fig. 1508.

Height, 50 ins.; weight, 75 lbs.; diameter of fan case, 14 ins.; complete with ball tuyere iron.  
Each.....\$18.00

The Gem is especially designed for use of prospectors and miners, as it can be easily taken apart and boxed or loaded on a pack mule. It can be run backward or forward, standing on the floor or bolted to the ceiling, and has sufficient capacity for all ordinary blacksmiths' work.

## Description Peerless Blower.

Fig. 1507.

This blower has capacity sufficient for all blacksmith and railroad repair shop work. Being operated by a crank, it will give a more regular and stronger blast than it is possible to secure from a lever blower.

## BUFFALO.

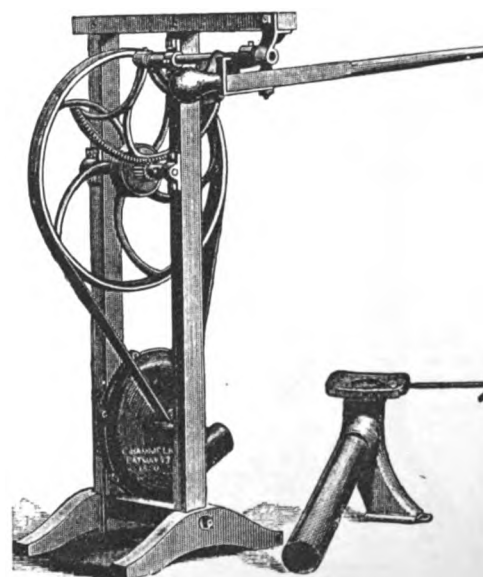


Fig. 1510.

Weight, 130 lbs.; diameter of fan, 14 ins.  
Complete with tuyere iron.....each, \$25.00  
Without tuyere iron....." 23.00

## HAND BLOWERS, BELLOWS AND TUYERE IRONS.

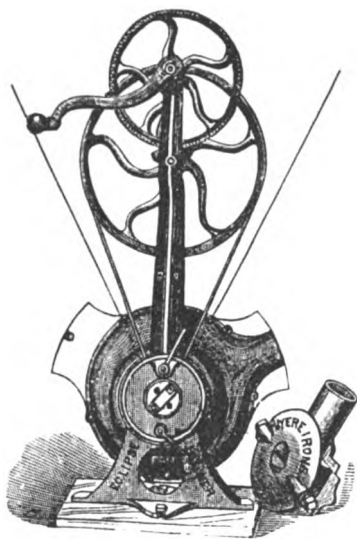
ECLIPSE BLOWER.  
With Crank.

Fig. 1511.

No. 1, complete with tuyere iron.....	each, \$22.00
" 1, without tuyere iron .....	" 20.00
" 2, complete with tuyere iron.....	" 17.00
" 2, without tuyere iron.....	" 15.00

The above prices include a patent adjustable elbow and pipe.  
The Eclipse Blowers run easily and are adjustable, both frame and fan, as shown by dotted lines in cuts, in any direction.  
No. 1. Fan, 16 inches diameter; 3 inches outlet. No. 2. Fan, 13 inches diameter; 2 3/4 inches outlet.

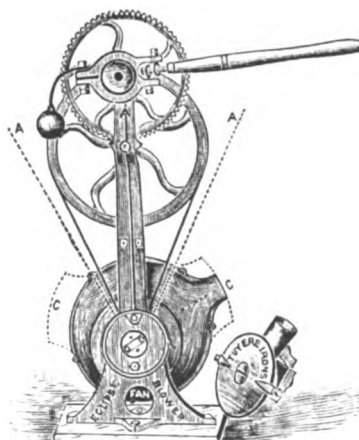
ECLIPSE BLOWER.  
With Lever.

Fig. 1512.

No. 1, complete with tuyere iron.....	each, \$25.00
" 1, without tuyere iron .....	" 23.00
" 2, complete with tuyere iron.....	" 19.00
" 2, without tuyere iron.....	" 17.00

WESTERN BLOWER.

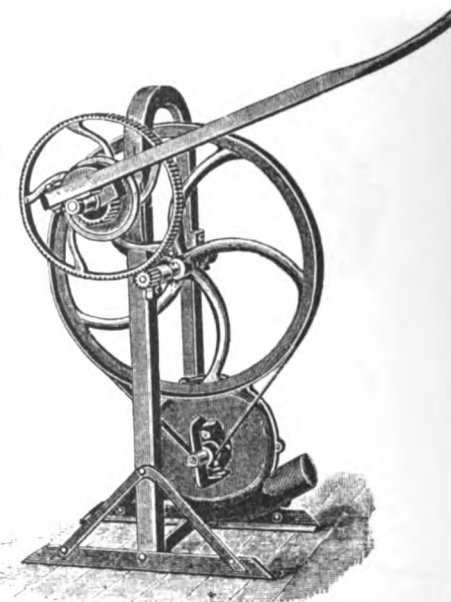


Fig. 1513.

Hand Blower.....	each, \$25.00
Hand and Power Blower.....	" 29.00

All iron except lever and belt, therefore not affected by fire or weather. The Hand and Power Blower has pulleys on main shaft, and by removing the gear wheel and handle power can be applied. Diameter of fan, 14 inches; hand blower weight 130 lbs.

HURRICANE BELLOWS.

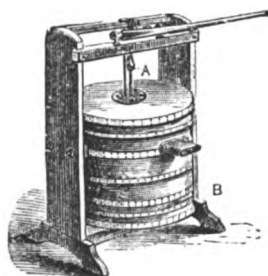


Fig. 1514.

Diameter.	Each.	Diameter.	Each.
21 inches...	\$18.00	30 inches...	\$30.00
24 " ...	20.00	32 " ...	32.00
27 " ...	23.00	34 " ...	35.00

MOTLEY'S STANDARD BLACKSMITHS' BELLOWS.

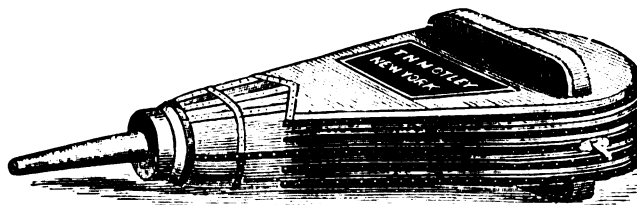


Fig. 1515.

Sizes, ins..	18	20	22	24	26	28	30
Each.....	\$10.00	10.00	10.00	10.00	11.00	12.00	13.00
Sizes, ins..	32	34	36	38	40	42	44
Each.....	\$14.00	16.00	18.00	20.00	23.00	27.00	32.00

WESTERN TUYERE IRON.



Fig. 1516.

With revolving center, for cleaning fire or changing size and direction of blast.  
Each .....\$2.00

BALL TUYERE IRON.

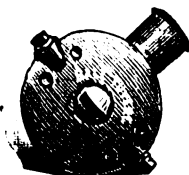


Fig. 1517.

Weight of iron, 25 lbs. It has a 3 inch opening for air to pass in, a revolving ball on top to regulate blast and slide for dropping ashes.  
Each.....\$2.50

MOTLEY'S IMPROVED TUYERE IRON.

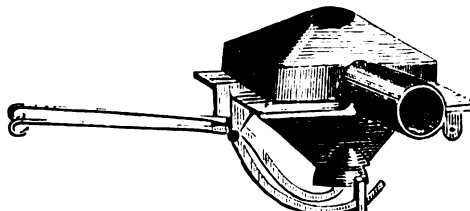


Fig. 1518.

This Tuyere Iron is superseding all others, as it allows a greater variety of blast, and is more easily freed of cinders and ashes than any other.  
Each .....\$5.00

EMPIRE TUYERE IRON.

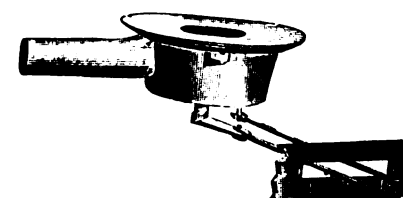


Fig. 1519.

Adjustable by the action of a rod connected with the arbor supporting the valve, which opens or closes it without disturbing valve.  
Each .....\$3.50

WATER TUYERE IRON.



Fig. 1520.

Each .....\$8.00

DUCK NEST TUYERE IRON.



Fig. 1521.

Each .....\$2.00

FORGE BACK.

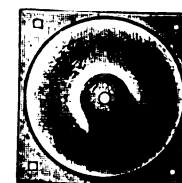


Fig. 1522.

12 inches x 13 inches.....per lb., \$0. --



## TIRE BENDERS.

### SINGLE GEARED BENDER.

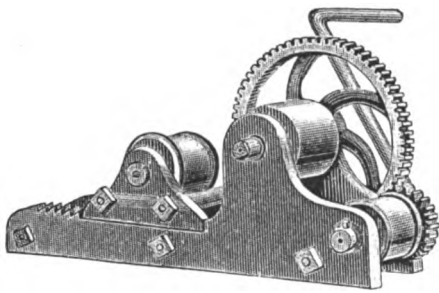


Fig. 1523.

Nos.	1	2
Bends iron, inches.	2x1 $\frac{1}{2}$	3x $\frac{5}{8}$
Each.	\$7.50	11.00

### COE'S IMPROVED BENDER.

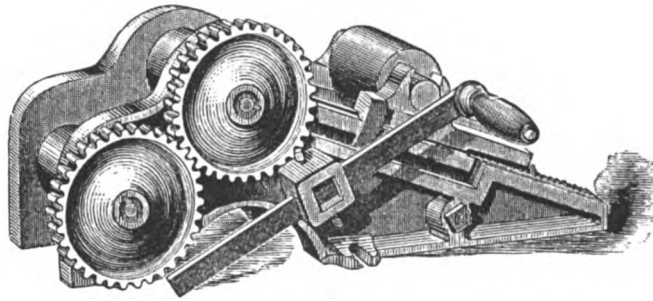


Fig. 1524.

Nos.	1	2
Bends iron, inches.	4x1 $\frac{1}{2}$	5x1
Each.	\$12.00	40.00

### DOUBLE GEARED BENDER.

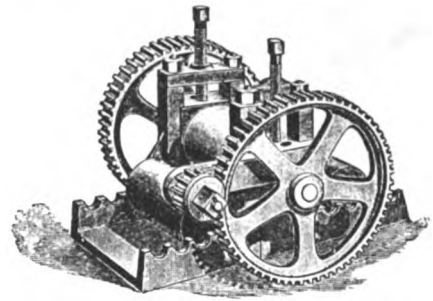


Fig. 1525.

Nos.	3	4	5
Bends iron, inches.	3 $\frac{1}{2}$ x $\frac{3}{4}$	6x1	6x1 $\frac{1}{4}$
Each.	\$12.50	22.50	24.00

### COLUMBIA BENDER.

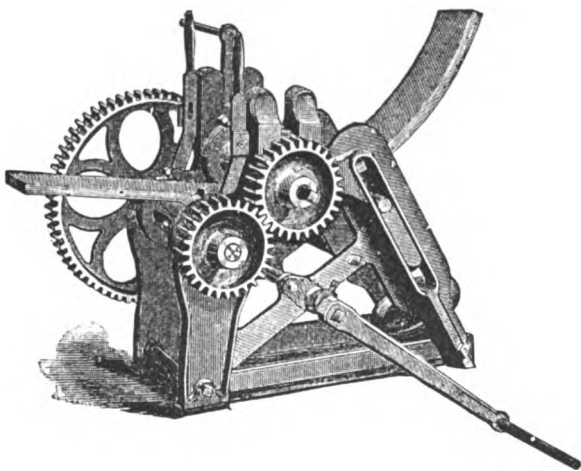


Fig. 1526.

Nos.	Bends Iron.	Weight.	Each.
1	5 $\frac{1}{2}$ x1 $\frac{1}{4}$ ins.	330 lbs.	\$40.00
2	4 x1 "	180 "	34.00

#### Description Columbia Bender.

Fig. 1526.

This machine will bend a large and heavy tire more easily and better than any other made. It is supplied with wrought iron shafts and collars, and can be adjusted to suit any tire or fifth wheel. It being long at the base gives it a powerful leverage, and thereby reduces the immense strain on both man and machine in working.

#### Description Green River Bender.

Fig. 1527.

This machine will bend accurately and easily tires from the lightest to  $\frac{5}{8}$  inch thick. The circle to be made is fixed by means of a right and left hand screw, operated by the hand-wheel acting equally upon the two lower rollers. Rollers are 3 inches wide, and upper roll is faced with steel and milled to insure the regular feeding through of the work. It is strongly geared, and two cranks may be used if desired.

### GREEN RIVER BENDER.

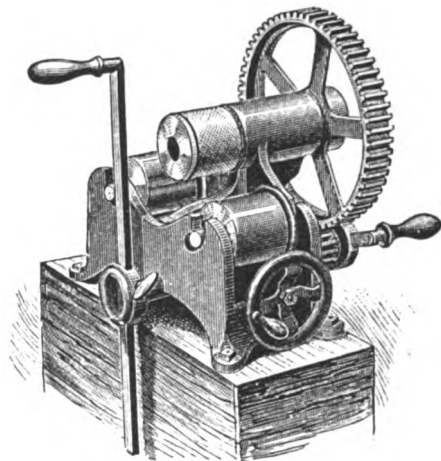


Fig. 1527.

Will bend tires up to 3x $\frac{5}{8}$  inch.  
Weight of bender, 140 lbs.  
Each ..... \$25.00

### HEAVY BENDER.

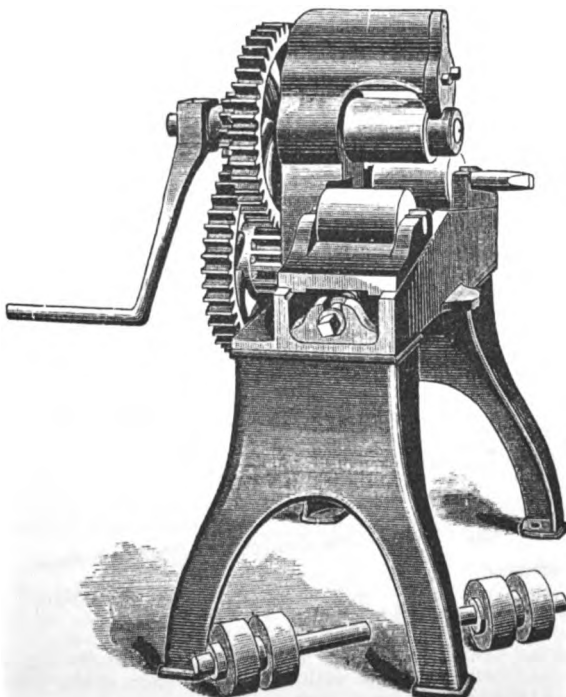


Fig. 1528.

#### Description Heavy Bender.

Fig. 1528.

This machine is made open on one side, so that a tire can be taken out without springing, and can be put back and trued after welding. It is also provided with an extra pair of grooved rolls for bending iron edgewise.

Nos.	Bends Iron.	Weight.	Each.
1	1 x4 ins.	500 lbs.	\$75.00
2	5 $\frac{3}{8}$ x2 $\frac{1}{2}$ "	250 "	45.00

#### Description Green River Bender.

Fig. 1529.

This machine will bend tires from the lightest to say 3 $\frac{1}{4}$ x6 inches or 1x4 inches, or edgewise 3 $\frac{3}{8}$ x13 $\frac{3}{8}$  inches. In principle it is like Fig. 1527.

The rollers are 6 inches wide, and the upper roller has a collar to guide narrow work.

Weight, 300 lbs.

Each ..... \$45.00

### GREEN RIVER BENDER.

No. 3.

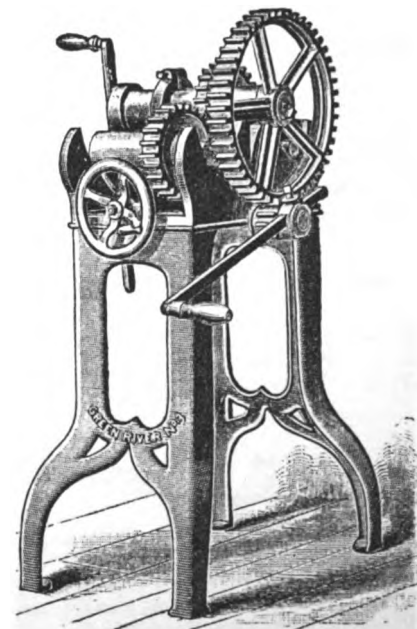


Fig. 1529.



ANVILS, SWAGE BLOCKS, ETC.

ANVIL.

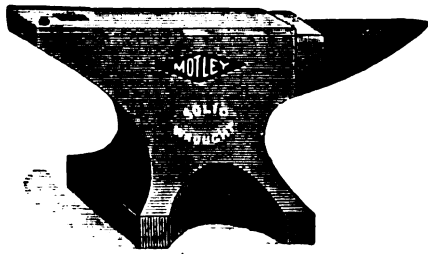


Fig. 1539.

Peter Wright's Pattern.

Solid wrought iron, steel face, warranted.

85 lbs. and heavier.....	per lb., \$0.01
70 to 84 lbs.....	add " .01
60 " 70 ".....	" " .01 1/2
50 " 60 ".....	" " .02
40 " 50 ".....	" " .03

FIFTH WHEEL PLATE.

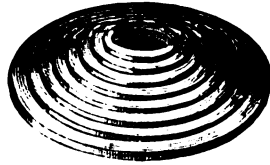


Fig. 1540.

For turning fifth wheels on edge and flat, after being bent and welded.

For 12 to 48 in. fifth wheels.....	each, \$18.00
" 11 " 50 ".....	" " 18.00

HORSE SHOERS' ANVIL.

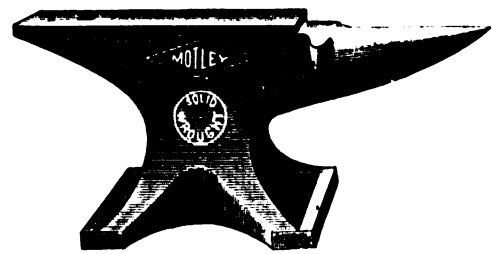


Fig. 1541.

Designed especially for horse shoers. Solid wrought iron, steel face, warranted.

85 lbs. and heavier.....	per lb., \$0.01
70 to 84 lbs.....	add " .01
60 " 70 ".....	" " .01 1/2
50 " 60 ".....	" " .02
40 " 50 ".....	" " .03

TIRE PLATE.

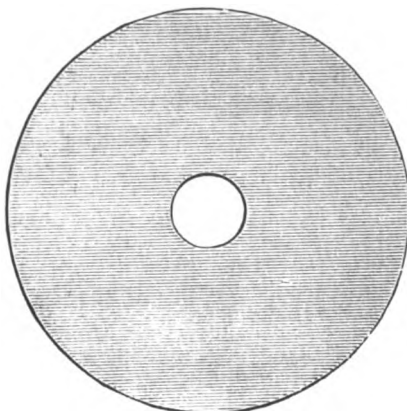


Fig. 1543.

For setting tires, straightening and trueing forgings, etc.

5 ft. diameter, 1 1/2 ins. thick.....	each, \$40.00
5 " " 1 3/8 " ".....	" 45.00
5 " " 1 3/4 " ".....	" 50.00

ANVIL AND VISE COMBINED.

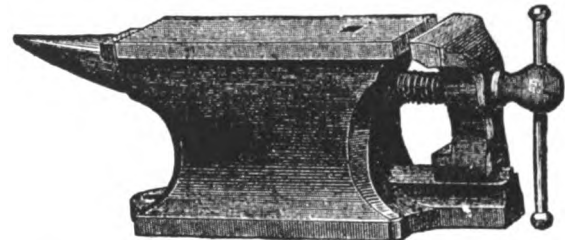


Fig. 1544.

Face of anvil is chilled, rendering it of sufficient strength and hardness to withstand all ordinary usage; wrought iron screw, with brass wire spring to throw the jaw.

Nos.	Size Face.	Size Jaw.	Weight.	Each.
1	10 1/2 x 4 ins.	4 ins.	40 lbs.	\$4.50
2	8 x 3 1/4 "	3 1/4 "	25 "	3.50
3	6 x 2 3/4 "	2 3/4 "	14 "	3.00

JEWELERS' ANVIL.

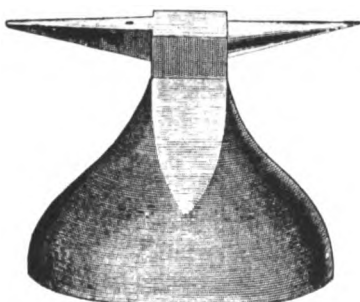


Fig. 1542.

Best steel horn, solid pedestal. Carefully and neatly made of the best material, and especially designed for jewelers' work.

Plain finish.....	each, \$1.25
Nickel plated.....	" 1.85

BENDING CONE.

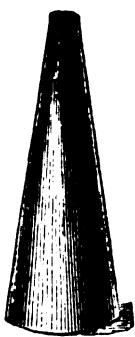


Fig. 1545.

Nos.	Diam. Base, Inches.	Height, Inches.	Weight, Pounds.	Diam. Top, Inches.
1	7	43 1/2	127	1
2	10	50	240	2
2 1/2	10	56	250	1
3	14 1/2	47	270	3 1/4
4	15	54	650	4
5	12	68	500	1
6	24	42	625	6

Price per pound.....\$0.01

Nos. 1, 2, 2 1/2 and 5 have flange base.  
Nos. 3, 4 and 6 have plain base.

EAGLE ANVIL.

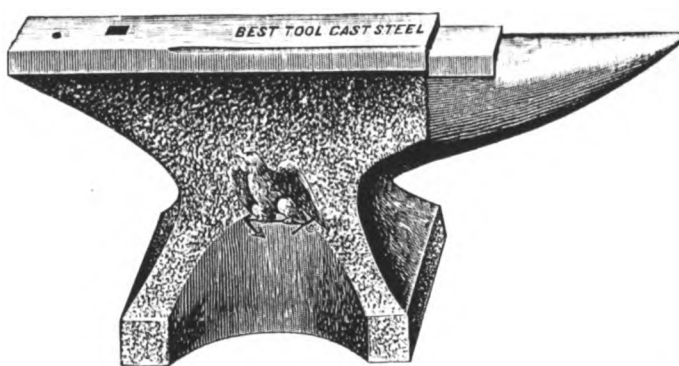


Fig. 1546.

Body of anvil is cast iron, face and horn of the best cast tool steel.  
Anvils, weighing 100 lbs. to 800 lbs.....per lb., \$0.10

SMALLER ANVILS—"MINIMS."

Nos.	000	00	0	1	2	3
Weight, lbs.	1 1/2	4	10	15	20	30
Each.....	\$1.00	1.75	2.25	2.75	3.00	3.75
Nos.	4	5	6	7	8	9
Weight, lbs.	40	50	60	70	80	90
Each.....	\$1.25	5.00	5.50	6.00	7.00	8.00

Every Eagle Anvil bears the Eagle trade-mark, and is fully warranted.

Standard Dimensions of Eagle Blacksmiths' Anvils.

Weight of anvil, lbs.	100	110	120	130	140	155	160	170	180	200	215	225	250	275	300	350	400	450	500
Length of face, inches.....	12	12 3/4	12 3/4	13 1/2	14	14 3/4	14 3/4	15	15 1/2	16 1/4	17	16 1/2	17 1/4	17 3/4	18 1/2	19 3/4	21	22	23
Width of face, ".....	3 1/2	3 1/2	3 3/4	3 3/4	4	4	4 1/4	4 1/4	4 1/4	4 3/4	4 3/4	4 3/4	5 1/4	5 1/4	5 1/4	6	6	6 1/2	6 1/2
Length of horn, ".....	8 1/4	8 1/4	8 1/4	9	9	10	10	10	10	10 1/2	10 3/4	10	10 1/2	11	11 1/2	12	12 1/2	13	14 1/2
Cutter hole, sq. ".....	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4

Eagle saw makers', chain makers', bit makers', axe makers', file makers' and special anvils of all sizes and shapes. Prices on application.

SWAGE BLOCK.

For Blacksmiths' Use.



Fig. 1547.

Weight.	Sizes, Inches.	Each.
100 lbs.	12x12x4 1/4	per lb., \$0.10
150 "	18x13x4 1/4	" "
200 "	18x18x4 1/4	" "

GREEN RIVER SWAGE BLOCKS.

Nos.	Sizes, Inches.	Weight.	Each.
1	12 1/4 x 12 1/4 x 1 1/4	100 lbs.	\$4.80
2	13 x 18 x 1 1/4	150 "	7.40
3	18 1/4 x 18 1/4 x 1 1/2	215 "	11.75

Plated Both Sides.

Nos.	1	2	3
Each.....	\$5.80	8.90	13.75

## BLACKSMITHS' TOOLS.

FLATTER. TOP SWAGE. BOTTOM SWAGE. TOP FULLER. BOTTOM FULLER. HARDIE. SET HAMMER.

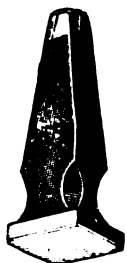


Fig. 1548.

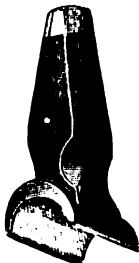


Fig. 1549.

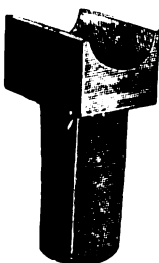


Fig. 1550.



Fig. 1551.

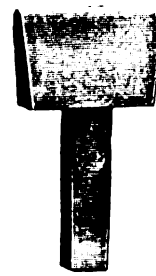


Fig. 1552.



Fig. 1553.



Fig. 1554.

SQUARE  
PUNCH.

CREASER.

Prices, Blacksmiths' Tools, Figs. 1548 to 1560.



Fig. 1555.



Fig. 1556.

	Solid Cast Steel.
Flatters.....	per lb., \$0.50
Swages.....	" .50
Fullers.....	" .50
Hardies.....	" .50
Set Hammers.....	" .50
Round Punches.....	" .55

	Solid Cast Steel.
Square Punches.....	per lb., \$0.55
Creasers.....	per doz., 10.00
Bending Tools.....	" 36.00
Heading Tools.....	per lb., .50
Cold Chisels.....	" .50
Hot ".....	" .50

BENDING TOOL.

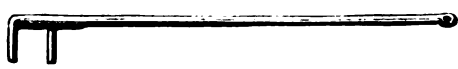


Fig. 1557.

HEADING TOOL.

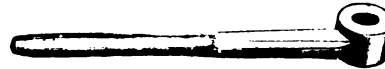


Fig. 1558.



Fig. 1559.



Fig. 1560.

COLLAR SWAGES.

NAIL POINTING ANVIL.

V TOOL.

V TOOL.

KILP SWAGES.



Fig. 1561.



Fig. 1562.



Fig. 1563.



Fig. 1564.



Fig. 1565.



Fig. 1566.



Fig. 1567.

Per lb.....\$0.70

Per lb .. \$0.70

Each.....\$1.50

Each.....\$1.00

Each.....\$2.50

Per lb..... \$0.70

Per lb.....\$0.70

PLAIN AND FANCY TONGS.



Fig. 1568.



Fig. 1570.



Fig. 1572.



Fig. 1574.

Plain Tongs, all lengths.....per lb., \$0.20



Fig. 1569.



Fig. 1571.



Fig. 1573.



Fig. 1575.

Fancy Tongs, all lengths.....per lb., \$0.25

HORSE SHOEING PINCERS.



Fig. 1576.

	No. 52, Wrought Iron, Steel Face.		
Length, inches.....	10	12	14
Per dozen.....	\$17.00	19.00	22.00
	No. 62, Solid Cast Steel.		
12 inch, cast steel (all steel).....	per dozen, \$30.00		

CAST STEEL HOOF NIPPERS.

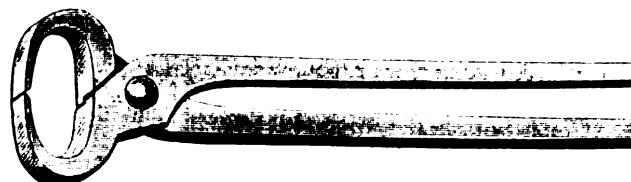


Fig. 1577.

	No. 32, Solid Cast Steel.
14 inches, cast steel (all steel).....	per dozen, \$26.00
	No. 82, Solid Cast Steel, Drop Forged.
14 inches, cast steel (all steel), drop forged.....	per dozen, \$35.00

# HORSE SHOEERS' TOOLS, HAMMERS AND SLEDGES.

## BLACKSMITHS' SLEDGE.

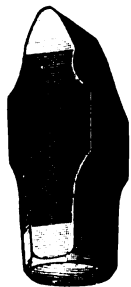


Fig. 1578.

Solid Cast Steel.  
3 to 5 lbs. .... Per lb. \$0.36  
5 lbs. and above. .30

## BUFFER.



Fig. 1579.

Each ..... \$2.00

## FARRIERS' KNIFE.



Fig. 1580.

Wostenholm's, Warranted.  
Bone Handle.  
Per dozen ..... \$7.50

## BUTTRESS.



Fig. 1581.

Wrought Iron, Steel Blade, Wood Handle.

Japaned ..... per dozen, \$20.00  
Polished ..... " 26.50

## PRITCHEL.



Fig. 1582.

Each ..... \$1.00

## STAMP PUNCH.



Fig. 1583.

Steel Punch, Wrought  
Iron Handle.  
Each ..... \$1.50

## HORSE SHOE TURNING SLEDGE.



Fig. 1584.

Solid Cast Steel.  
6 to 10 lbs.  
Per lb. .... \$0.40

## HORSE SHOE TURNING HAMMER.

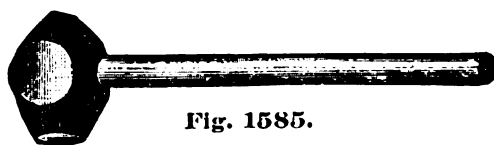


Fig. 1585.

Solid Cast Steel.

Half polished, 2 to 3 lbs. .... per dozen, \$30.00  
Full " 2 " 3 " ..... " 34.00

## ADZE EYE FARRIERS' HAMMER.

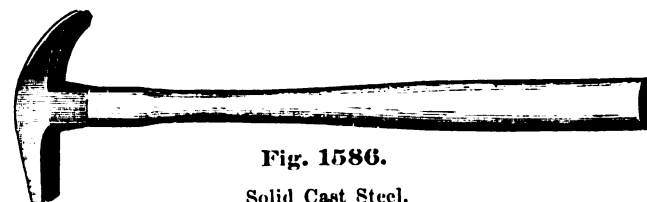


Fig. 1586.

Solid Cast Steel.

12 ounces ..... per dozen, \$9.00 15 ounces ..... per dozen, \$9.50  
Plain Eye, Solid Cast Steel.  
7 ounces ..... per dozen, \$6.25

## STONE SLEDGE.

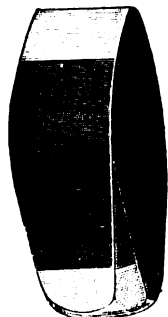


Fig. 1587.

Solid Cast Steel.  
Per lb.  
Under 3 lbs. .... \$0.45  
3 to 5 lbs. .... .36  
5 lbs. and above, .30

## SPAULING OR STONE HAMMERS.



Fig. 1588.

Solid Cast Steel.  
Per lb.  
Under 3 lbs. .... \$0.45  
3 to 5 lbs. .... .40  
5 lbs. and above, .36



Fig. 1589.

Solid Cast Steel.  
Per lb.  
Under 3 lbs. .... \$0.45  
3 to 5 lbs. .... .40  
5 lbs. and above, .36

## MASON'S HAMMER.



Fig. 1590.

Solid Cast Steel.  
Per lb.  
Under 3 lbs. .... \$0.50  
3 to 5 lbs. .... .45  
5 lbs. and above, .40

## COAL SLEDGE.



Fig. 1591.

Solid Cast Steel.  
Per lb.  
3 to 5 lbs. .... \$0.36  
5 lbs. and above, .30

## STRIKING HAMMER.



Fig. 1592.

Solid Cast Steel.  
Per lb.  
Under 3 lbs. .... \$0.45  
3 to 5 lbs. .... .36  
5 lbs. and above, .30

## HAND DRILL HAMMER.



Fig. 1593.

Solid Cast Steel.  
Under 3 lbs. .... per lb., \$0.45  
3 to 5 lbs. .... " .40  
Furnished handled when so ordered.

## NAPPING HAMMER.



Fig. 1594.

Solid Cast Steel.  
Under 3 lbs. .... per lb., \$0.45  
3 to 5 lbs. .... " .36  
5 lbs. and above, .30

## PATENT BUSH HAMMER.



Fig. 1595.

Blades Best Tool Steel.  
Made any number of blades, as  
desired.  
Prices on application.

## BUSH HAMMER.



Fig. 1596.

Finest Grade Tool Steel.  
Teeth are machine cut.  
3 to 6 lbs. .... per lb., \$1.00  
State number of teeth to the inch.

## BLACKSMITHS' HAND HAMMER.



Fig. 1597.

Solid Cast Steel.

Nos.	0	1	2	3	4	5
Weight	1 lb. 10 oza.	2 lbs.	2 lbs. 10 oza.	3 lbs.	3 lbs. 8 oza.	4 lbs. 8 oza.
Per dozen	\$13.00	14.00	15.00	16.00	17.00	19.00

Weights of hammers do not include handles.

## ENGINEERS' HAMMER.

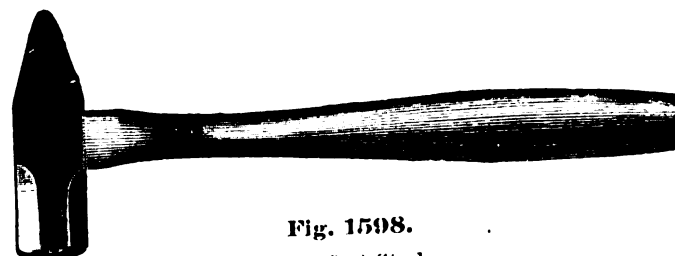


Fig. 1598.

Solid Cast Steel.

Nos.	0	1	2	3	4	5	6
Weight	1 lb. 2 oza.	1 lb. 10 oza.	2 lbs.	2 lbs. 8 oza.	3 lbs.	3 lbs. 8 oza.	4 lbs. 8 oza.
Per dozen	\$12.00	13.00	14.00	15.00	16.00	17.00	19.00



## HAMMERS.

## ENGINEERS' HAMMER.

Double Face.

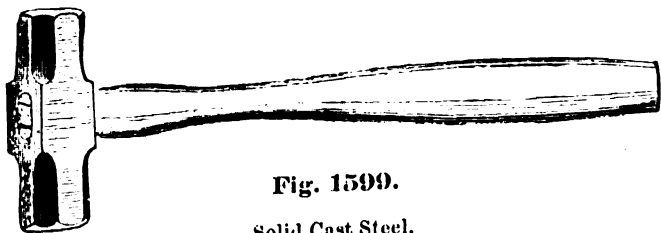


Fig. 1599.

Solid Cast Steel.

Nos.	0	1	2	3	4
Weight	1 lb. 8 ozs.	2 lbs.	2 lbs. 6 ozs.	3 lbs.	3 lbs. 10 ozs.
Per dozen	\$14.50	15.50	16.50	18.00	19.50

## RIVETING HAMMER.

Plain Eye.

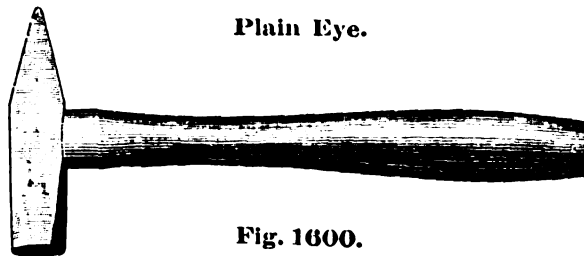


Fig. 1600.

Solid Cast Steel.

Nos.	0	1	2	3	4	5	6	7
Weight	4 ozs.	7 ozs.	9 ozs.	12 ozs.	15 ozs.	1 lb. 2 ozs.	1 lb. 6 ozs.	1 lb. 10 ozs.
Per dozen	\$5.50	5.75	6.00	6.25	6.50	7.00	7.50	8.00

## MACHINISTS' HAMMERS.

Ball Pein.

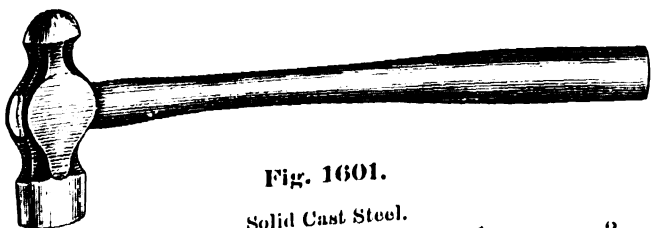


Fig. 1601.

Solid Cast Steel.

Nos.	4/0	3/0	2/0	0	1	2
Weight	6 ozs.	8 ozs.	12 ozs.	1 lb.	1 lb. 4 ozs.	1 lb. 8 ozs.
Per dozen	\$12.00	12.00	12.00	12.50	13.50	14.50

Straight Pein.

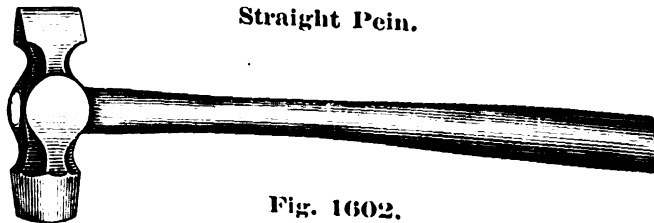


Fig. 1602.

Solid Cast Steel.

Nos.	4/0	3/0	2/0	0	1	2	3	4	5	6	7	8	9
Weight	6 ozs.	8 ozs.	12 ozs.	1 lb.	1 lb. 4 ozs.	1 lb. 8 ozs.	1 lb. 12 ozs.	2 lbs.	2 lbs. 4 ozs.	2 lbs. 8 ozs.	2 lbs. 12 ozs.	3 lbs.	3 lbs. 8 ozs.
Per dozen	\$12.00	12.00	12.00	12.50	13.50	14.50	15.50	16.50	17.50	19.00	20.50	22.00	24.00

## MACHINISTS' HAMMER.

Cross Pein.

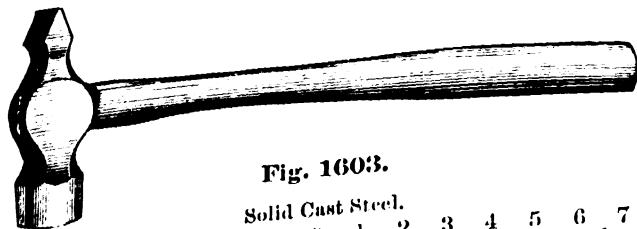


Fig. 1603.

Solid Cast Steel.

Nos.	4/0	3/0	2/0	0	1	2	3	4	5	6	7	8	9
Weight	6 ozs.	8 ozs.	12 ozs.	1 lb.	1 lb. 4 ozs.	1 lb. 8 ozs.	1 lb. 12 ozs.	2 lbs.	2 lbs. 4 ozs.	2 lbs. 8 ozs.	2 lbs. 12 ozs.	3 lbs.	3 lbs. 8 ozs.
Per dozen	\$12.00	12.00	12.00	12.50	13.50	14.50	15.50	16.50	17.50	19.00	20.50	22.00	24.00

## CHIPPING HAMMER.

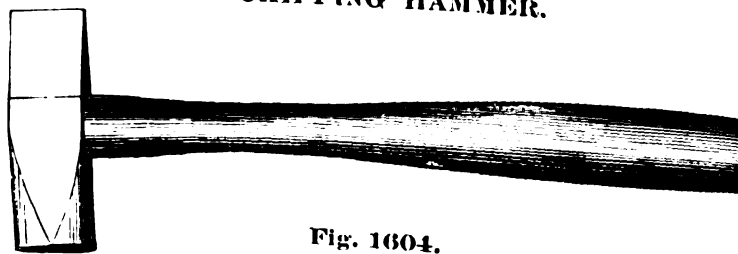


Fig. 1604.

Solid Cast Steel.

Nos.	4/0	3/0	2/0	0	1	2	3	4	5
Weight	6 ozs.	8 ozs.	12 ozs.	1 lb.	1 lb. 4 ozs.	1 lb. 8 ozs.	2 lbs.	2 lbs. 4 ozs.	2 lbs. 8 ozs.
Per dozen	\$12.50	13.00	13.50	14.50	15.50	16.50	17.50	18.50	19.50

## NAIL HAMMERS.

Adze Eye.



Fig. 1605.

Solid Cast Steel.

Nos.	0	1	1 1/2	2	3
Weight	1 lb. 12 ozs.	1 lb. 4 ozs.	1 lb.	13 ozs.	7 ozs.
Per dozen	\$12.50	9.00	8.50	8.00	7.50

Adze Eye, Bell Face.

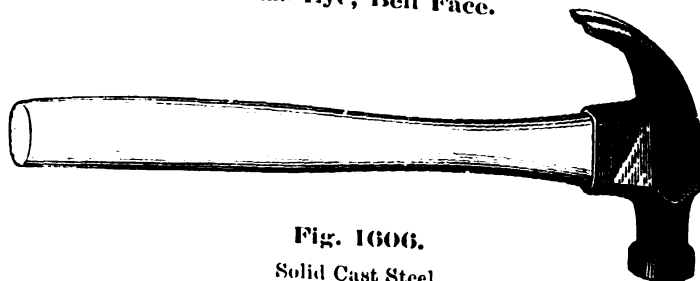


Fig. 1606.

Solid Cast Steel.

Nos.	0	1	1 1/2	2	3
Weight	1 lb. 12 ozs.	1 lb. 4 ozs.	1 lb.	13 ozs.	7 ozs.
Per dozen	\$9.00	8.50	8.00	7.50	7.00

NAIL HAMMER.  
Plain Eye.

Fig. 1607.

Solid Cast Steel.

Nos.	0	1	2	3	4
Weight	7 ozs.	12 ozs.	15 ozs.	1 lb. 2 ozs.	1 lb. 8 ozs.
Per dozen	\$6.25	6.50	6.75	7.00	8.00

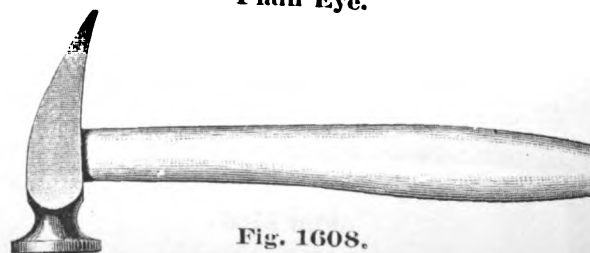
SHOE HAMMER.  
Plain Eye.

Fig. 1608.

Cast Steel Face.

Nos.	2/0	0	1	2	3	4
Weight	9 ozs.	10 ozs.	12 ozs.	14 ozs.	1 lb.	1 lb. 2 ozs.
Per dozen	\$3.75	3.75	4.15	4.60	5.00	5.40

Weights of hammers do not include handles.

# HAMMERS, NAIL PULLERS, ETC.

## COPPER TIPPED HAMMER.

## PLANISHING HAMMER. COPPER HAMMER.

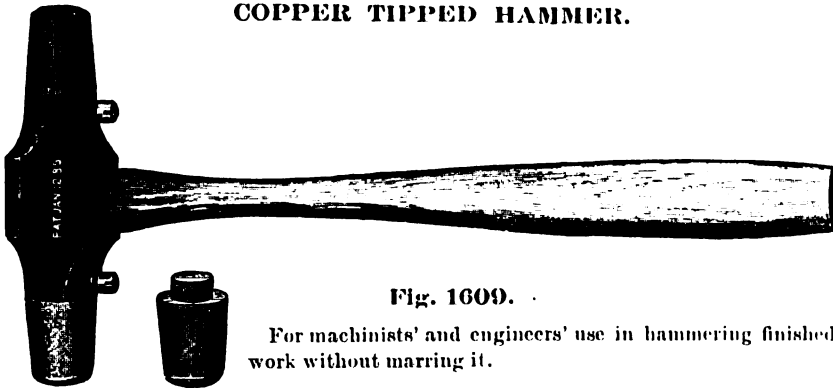


Fig. 1609.

For machinists' and engineers' use in hammering finished work without marring it.

Hammers Complete, with Handle and Tips.

Nos	1	2	3
Weight, .....	12½ oz.	15½ oz.	24 oz.
Black, per doz .....	\$18.00	20.40	24.00
Nickel, " .....	24.00	26.40	30.00

Extra Copper Tips.

Nos.	Per doz. pairs.
1 .....	\$6.00
2 .....	7 20
3 .....	8.40



Fig. 1610.

For tinners' use. Solid cast steel, without handles.  
Per lb.....\$1.00

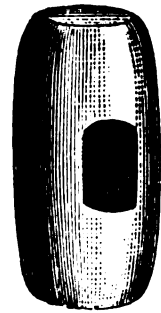


Fig. 1611.

For use on finished work by machinists, etc.  
Weighing each 1 to 10 lbs.  
Per lb .....\$0.50

## TACK HAMMER.

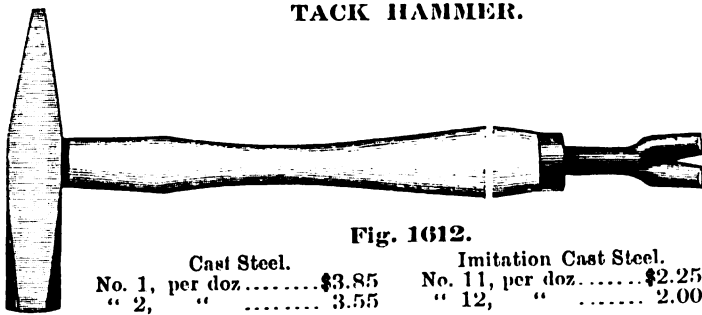


Fig. 1612.

Cast Steel.		Imitation Cast Steel.	
No. 1, per doz.....	\$3.85	No. 11, per doz.....	\$2.25
" 2, " .....	3.55	" 12, " .....	2.00

## MAGNETIC TACK HAMMER.

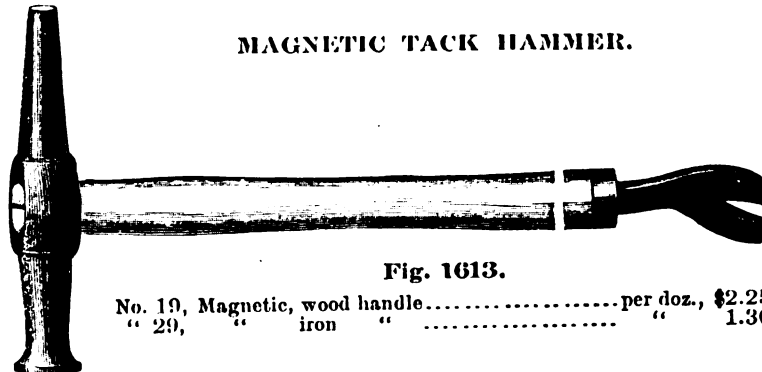


Fig. 1613.

No. 19, Magnetic, wood handle.....	per doz., \$2.25
" 29, " iron " .....	" 1.30

## SOLID CAST STEEL TACK HAMMERS.

No. 32, Solid cast steel hammer and claw, wood handle.....per doz., \$8.00

## TACK CLAWS.

No. 10, Polished, white handle.....	per doz., \$1.65
" 30, Cast steel, black " .....	" 2.85

## GIANT NAIL PULLER.

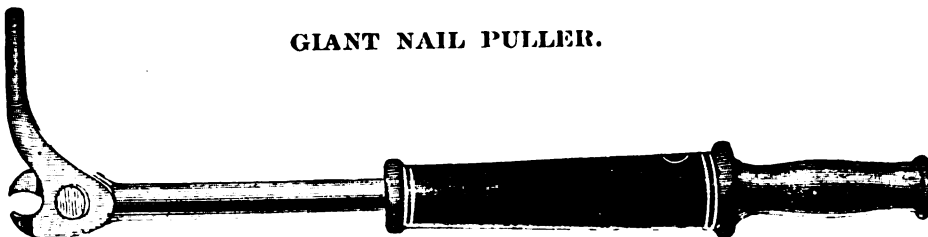


Fig. 1614.

No. 1, Length, 18 inches, weight, 5 lbs. each.....	per doz., \$30.00
" 2, " 15 " " 3 " " .....	" 22.00

## ROUND NAIL SET.



Fig. 1615.

Cast Steel, Polished.	
Assorted, ⅜, ½ and ⅝ inches.....	per gross, \$18.50
" ¼ and ⅝ inches.....	" 21.00

## OCTAGON NAIL SET.



Fig. 1616.

Cast Steel.

Diameter, inches.....	⅜	½	⅝
Per gross .....	\$8.50	12.00	15.00
Assorted, ⅜, ½ and ⅝ in. per gro. \$12.00	Assorted, ¼ and ⅝ in. per gro. \$13.50		

## OCTAGON COLD CHISEL.

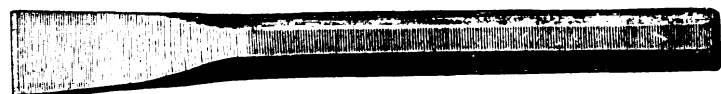


Fig. 1617.

Solid Cast Steel.

Width of cut, inches.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Per dozen.....	\$2.60	3.70	5.60	7.60	10.80	14.00
Assorted, $\frac{3}{8}$ to $\frac{7}{8}$ in. per doz., \$6.00	Assorted, $\frac{3}{8}$ to 1 in. per doz., \$7.50					

## FLAT BOX CHISEL.



Fig. 1618.

Solid Cast Steel.

No. 73, Whole length, 15 inches.....	per doz., \$14.25
" 74, " 15 " polished.....	" 15.25

## ROUND BOX CHISEL.



Fig. 1619.

Wrought Iron, Steel Faced.

Length, inches ..	10	12	14
Per dozen.....	\$6.00	6.40	7.00

## MALLET AND HATCHETS.

## ROUND Mallet.

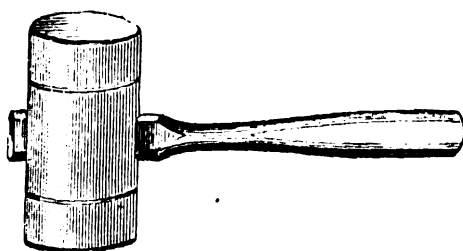


Fig. 1620.

HICKORY.

No. 1,	5 ins. long,	3 ins. diam.	per doz.,	\$1.50
" 2,	5½ " "	3½ " "	" "	2.00
" 3,	6 " "	4 " "	" "	2.50

LIGNUMVITÆ.

No. 5,	5 ins. long,	3 ins. diam.	per doz.,	\$3.00
" 6,	5½ " "	3½ " "	" "	4.00
" 7,	6 " "	4 " "	" "	5.00

## RINGED Mallet.

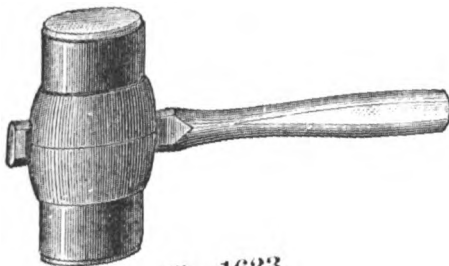


Fig. 1623.

Hickory, with heavy iron rings.

No. 14,	6 ins. long,	4 ins. diam.	per doz.,	\$5.50
" 1½,	5½ " "	3½ " "	" "	4.40

## SHINGLING HATCHET.

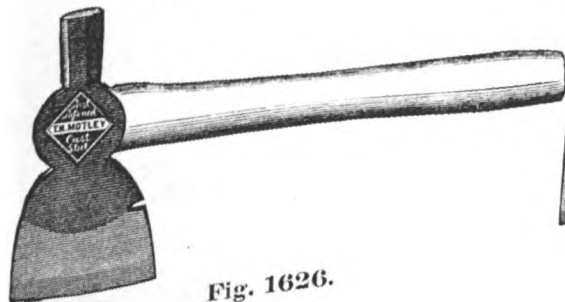


Fig. 1626.

Gold Bronzed.

"MOTLEY" EXTRA FINISH.				
Nos.	1	2	3	
Width of cut.	3½ ins.	3¾ ins.	4¾ ins.	
Per dozen	\$8.00	8.50	9.00	
"NEWARK" BRAND.				
Nos.	1	2	3	
Per dozen	\$7.25	8.00	8.75	

## HALF HATCHET.

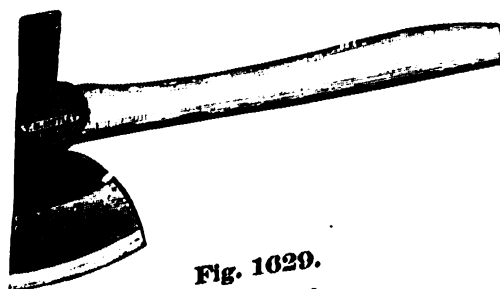


Fig. 1629.

Gold Bronzed.

"MOTLEY" EXTRA FINISH.				
Nos.	1	2	3	
Width of cut.	3½ ins.	3¾ ins.	4¾ ins.	
Per dozen	\$8.50	9.00	9.50	

## TINNERS' Mallet.



Fig. 1621.

HICKORY.

No. 4,	5½ ins. long,	assorted 2¼ & 2½ ins. diameter.	per doz.,	\$1.00
--------	---------------	---------------------------------	-----------	--------

## PATENT RAW HIDE Mallet.



Fig. 1624.

These mallets are made entirely of hide (except the handle), and are suited to a variety of light work.

Nos.	Length.	Diameter.	Weight.	Each.
0	1¾ ins.	1 in.	1½ ozs.	\$0.20
1	2½ " "	1½ " "	3 " "	.25
2	2¾ " "	1½ " "	5 " "	.30
3	3 " "	1¾ " "	7 " "	.35
4	3¼ " "	2 " "	10 " "	.45

## LATHING HATCHET.

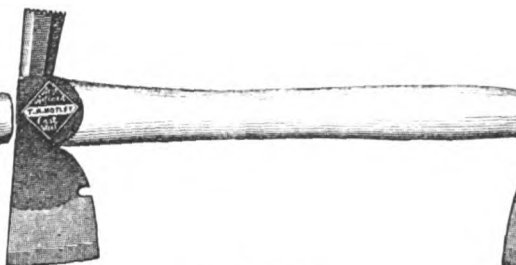


Fig. 1627.

Gold Bronzed.

"MOTLEY" EXTRA FINISH.

Nos.	1	2	3
Width of cut.	2½ ins.	2¾ ins.	3 ins.
Per dozen	\$8.00	8.50	9.00

"NEWARK" BRAND.

Nos.	1	2	3
Per dozen	\$7.75	8.25	8.75

## SOLID STEEL HATCHETS.

Full Polished, Etched Blades.

These Hatchets are same shapes and sizes as Figs. 1626, 1628 and 1629, but the entire head of hatchet is made from the best tool steel.

## Prices, Shingling Hatchets.

Nos.	1	2	3
Per dozen	\$10.00	11.00	12.00

## Prices, Claw Hatchets.

Nos.	1	2	3
Per dozen	\$11.00	12.00	13.00

## Prices, Half Hatchets.

Nos.	1	2	3
Per dozen	\$10.50	11.50	12.50

## SQUARE Mallet.

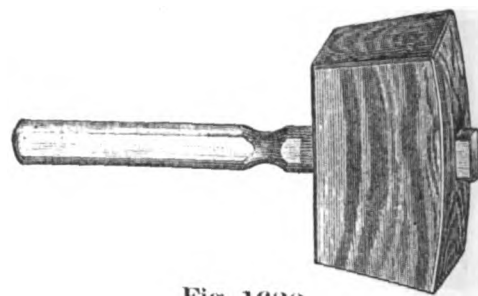


Fig. 1622.

HICKORY.

No. 8,	6 ins. long,	2½x3½ ins.	per doz.,	\$2.00
" 9,	6½ " "	2¾x3¾ " "	" "	2.50
" 10,	7 " "	3 x4 " "	" "	3.00

LIGNUMVITÆ.

No. 11,	6 ins. long,	2½x3½ ins.	per doz.,	\$3.75
" 12,	6½ " "	2¾x3¾ " "	" "	4.75
" 13,	7 " "	3 x4 " "	" "	5.75

## SOCKET Mallet.

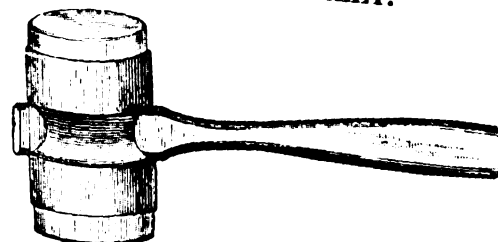


Fig. 1625.

Heavy malleable iron socket, hickory ends.

No. 16,	hickory ends,	3 ins. diam.	per doz.,	\$7.50
---------	---------------	--------------	-----------	--------

## CLAW HATCHET.



Fig. 1628.

Gold Bronzed.

"MOTLEY" EXTRA FINISH.

Nos.	1	2	3
Width of cut.	3½ ins.	3¾ ins.	4¾ ins.
Per dozen	\$9.00	9.50	10.00

"NEWARK" BRAND.

Nos.	1	2	3
Per dozen	\$8.25	9.00	9.75

## HUNTERS' HATCHET.



Fig. 1630.

Gold Bronzed.

"MOTLEY" EXTRA FINISH.

No. 2	per dozen,	\$10.00
-------	------------	---------

"NEWARK" BRAND.

No. 2	per dozen,	\$9.75
-------	------------	--------

ADZES AND AXES.

RAILROAD ADZE.

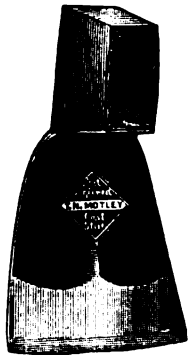


Fig. 1631.

Gold Bronzed

"MOTLEY," EXTRA FINISH.

5 to 5½ inch cut.

Per dozen.....\$26.00

All 6 in. cut.

Per dozen.....\$27.00

BENCH AXE OR BROAD HATCHET.

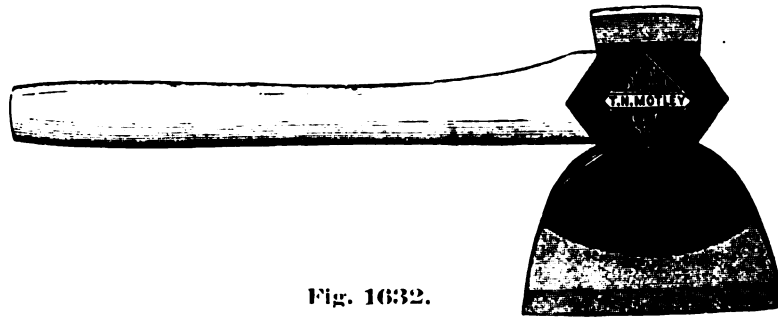


Fig. 1632.

Gold Bronzed.

"MOTLEY," EXTRA FINISH.

Nos.....	1	2	3	4	5	6	7	8	9
Width of cut	4 ins.	4½ ins.	5 ins.	5½ ins.	6 ins.	6½ ins.	7 ins.	7½ ins.	8½ ins.
Per dozen..	\$10.50	11.50	13.00	14.50	16.50	18.00	19.50	22.00	25.00

CARPENTERS' ADZE.



Fig. 1633.

Gold Bronzed

"MOTLEY," EXTRA FINISH.

Square head.

Per dozen.....\$24.00

Flat head.

Per dozen.....\$24.00

BOYS' AXE.

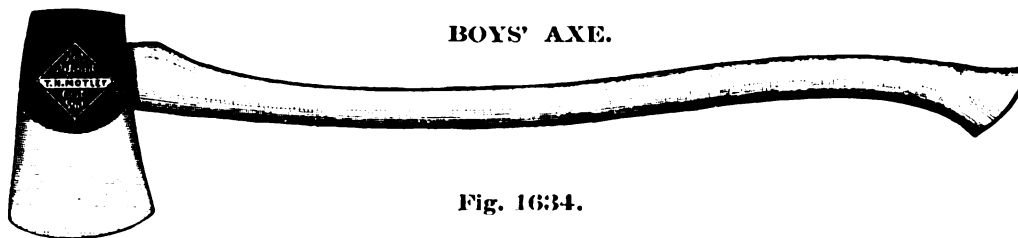


Fig. 1634.

Gold Bronzed.

"MOTLEY," EXTRA FINISH.

No. 1, 26 inch handles.....per dozen, \$13.50

"NEWARK" BRAND.

No. 1.....per dozen, \$11.50 No. 2.....per dozen, \$13.75

PENN. PATTERN BROAD AXE.

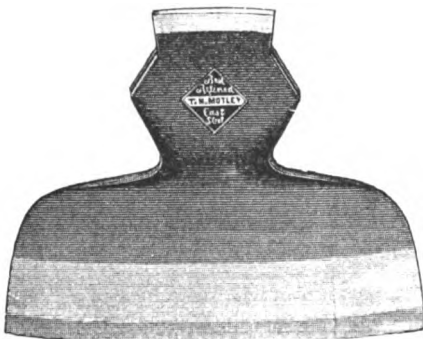


Fig. 1635.

Prices, Broad Axes, Figs. 1635 and 1636.

Gold Bronzed.

"MOTLEY," EXTRA FINISH.

5 to 6, 5½ to 6½, 6 to 7, 6½ to 7½ lbs.....	per dozen, \$32.00
7 to 8, 7½ to 8½, 7 to 9.....	" 35.00
8 to 9, 8½ to 9½, 8 to 10.....	" 38.00

WESTERN PATTERN BROAD AXE.

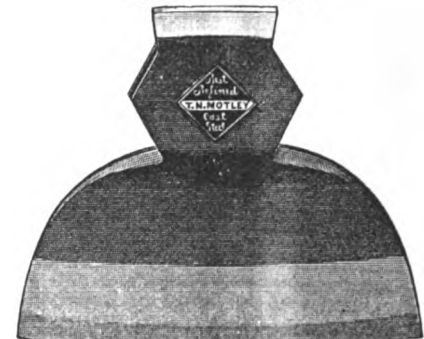


Fig. 1636.

CHOPPING AXES.

Kentucky Pattern.

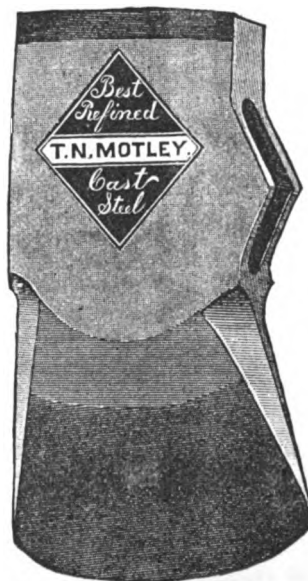


Fig. 1638.

Michigan Pattern.

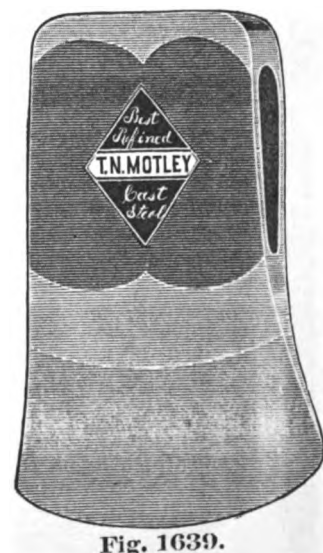


Fig. 1639.

Yankee Pattern.

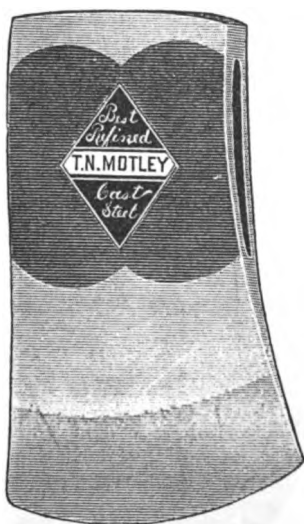


Fig. 1637.

Assortment of Weights of Axes, Yankee, Kentucky or Michigan Patterns.

LIGHT.			MEDIUM.			HEAVY.			EXTRA HEAVY.		
3 to 4 lbs.	3½ to 4¼ lbs.	3½ to 4½ lbs.	3¾ to 4¾ lbs.	4 to 5 lbs.	4¼ to 5¼ lbs.	4½ to 5½ lbs.	4 to 5 lbs.	4¼ to 5¼ lbs.	5 to 6 lbs.	5½ to 6½ lbs.	6 to 7 lbs.
Prices on application.											
Beveled Axes, extra.....per dozen, \$0.50						Axes handled with 36 inch handles, extra.....per dozen, \$2.50					

## AXES AND BUSH HOOKS.

## SPANISH PATTERN AXES.

De Tumba.  
Oval Eye, Round Head.

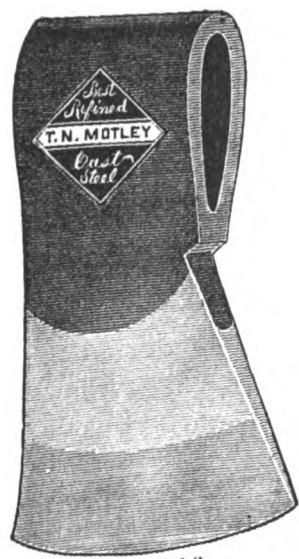


Fig. 1640.

De Tumba.  
Oval Eye, Flat Head.

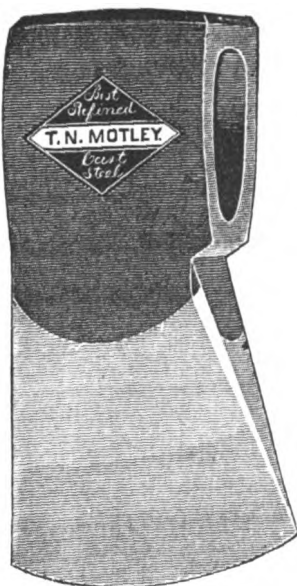


Fig. 1641.

Media Labor.

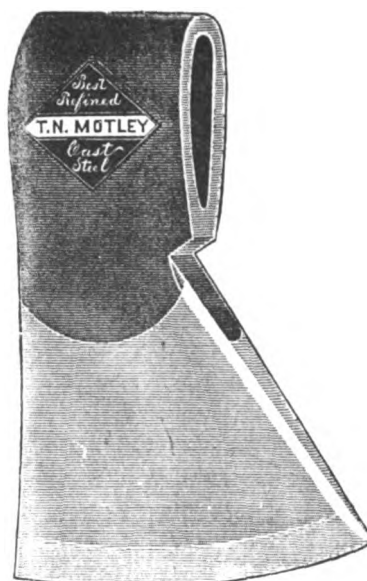


Fig. 1642.

Labor Entera.

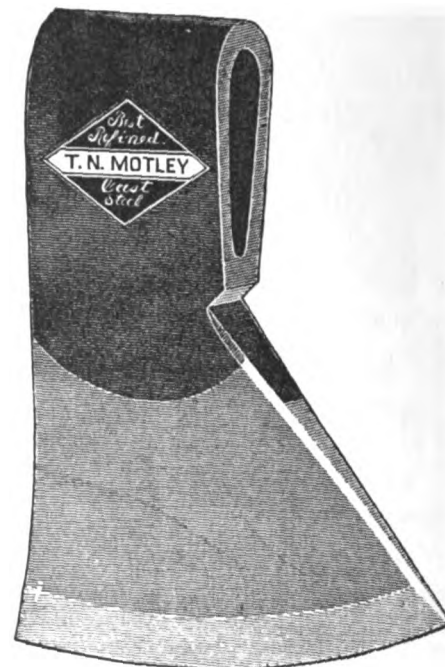


Fig. 1643.

Prices, De Tumba Axes.  
Fig. 1640.

3 to 3½ lbs. 3 to 4 lbs. 3½ to 4½ lbs. 4 to 4¾ lbs.  
Per dozen .....\$10.00

Prices, Flat Head De Tumba Axes.  
Fig. 1641.

Weight, 4 lbs.....per dozen, \$10.00

AXE-HANDLED BUSH HOOK.

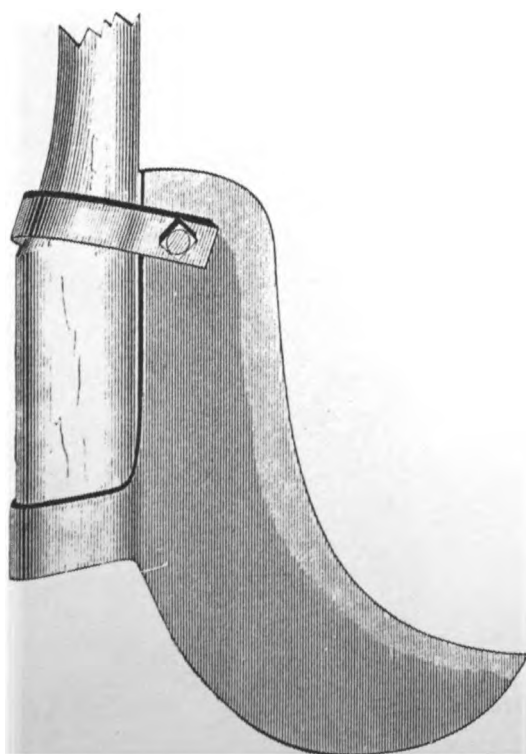


Fig. 1645.

Gold Bronzed.  
With axe handles.....per dozen, \$13.50

## DOUBLE BITTED AXE.

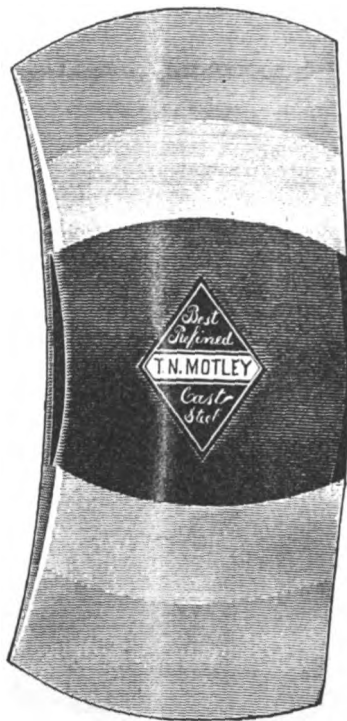


Fig. 1644.

4 to 5 lbs. 4½ to 5½ lbs. 4½ to 5½ lbs.  
4½ to 6 lbs. 5 to 6 lbs.

Per dozen .....\$.....

Beveled Axes, extra.....per dozen, \$0.50

I can furnish special grade of axes of all styles  
stamped and labeled to suit customers.

Prices quoted on application.

Prices, Media Labor Axes.  
Fig. 1642.

Usual weight, 4 lbs. Made 3 to 5 lbs.  
Per dozen.....\$12.25

Prices, Labor Entera Axes.  
Fig. 1643.

Weight, 5½ lbs.....per dozen, \$14.00

## TWO-RING BUSH HOOK.

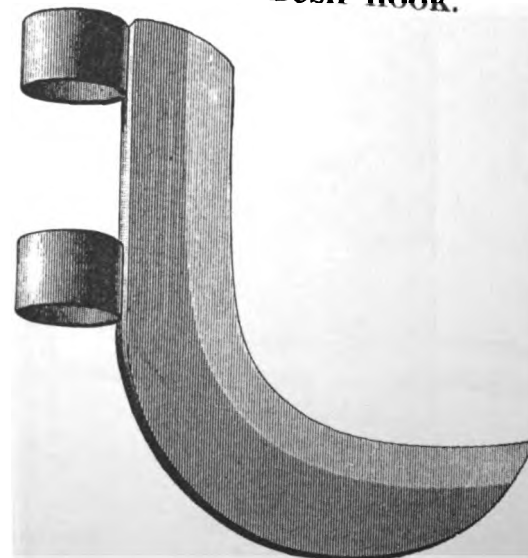


Fig. 1646.

Painted Red.

Without handles.....per dozen, \$16.00



# PICKS, MATTOCKS AND MAULS.

SOLID EYE RAILROAD PICK.



Fig. 1647.

Weight, lbs.	4	4½	5	5½	6	6½	7	8	9	
Per doz.	\$10.50	11.00	11.50	12.00	12.50	13.00	13.50	14.50	16.00	
Assorted	{									
	Weight, lbs.	4 to 5		5 to 6		6 to 7		7 to 8		8 to 9
	Per doz.	\$11.00		12.00		13.00		14.00		15.25

SOLID EYE TAMPING PICK.



Fig. 1648.

Weight, lbs....	6	6½	7	7½	8	9
Per doz.....	\$16.50	17.00	17.50	18.00	18.50	19.50
Assorted {	Weight, lbs..... 6 to 7		7 to 8		8 to 9	
	Per doz.....\$17.00		18.00		19.00	

DRIFTING, OR MINERS' PICK.



Fig. 1649.

Weight, lbs.	3	4	4½	5	6
Per doz.	\$10.50	11.50	12.00	13.00	14.00

CALIFORNIA SURFACE MINING PICK.



Fig. 1650.

Weight, lbs.	3	3½	4	4½	5
Per doz.	\$10.00	10.50	11.00	12.00	13.00

COAL PICK.



Fig. 1651.

Weight, lbs.	2½	3	3½	4	5
Per doz.	\$9.50	10.00	11.00	11.50	12.50

PICK BLANK.  
Drawn.



Fig. 1655.

MILL PICK.



Fig. 1652.

Solid Cast Steel.	
Weight, 2 to 3 lbs.	Per doz. \$22.00

POLL PICK.



Fig. 1653.

Weight, lbs.	4	4½	5	6
Per doz.	\$12.50	13.00	13.50	14.50

STONE PICK.



Fig. 1654.

Weight, lbs.	6 to 7	7 to 8	8 to 9
Per doz.	\$16.00	17.00	18.00

PICK BLANK  
Not Drawn.



Fig. 1657.

SOLID EYE, DOUBLE POINTED, CONTRACTORS' PICK.



Fig. 1656.

Made of extra quality iron and steel and designed for Contractors' use. Made any weight desired, from 6 to 9 lbs.

Special prices on application.

Prices, Solid Eye Railroad Pick Blanks.

For Picks, Weight, lbs.	4	4½	5	5½	6	6½	7	8
Per doz.	\$8.50	9.00	9.50	10.00	10.50	11.00	11.50	12.50

Prices, Solid Eye Mattock Blanks.

For Mattocks	Long Cutter,	Short Cutter,
Per doz.	\$11.50	10.50

LONG CUTTER  
MATTOCK.

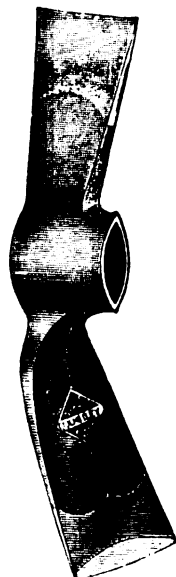


Fig. 1659.

Long Cutter, per doz.	\$16.00
Short " " "	15.50

BOSTON PATTERN, DOUBLE POINTED CONTRACTORS' PICK.

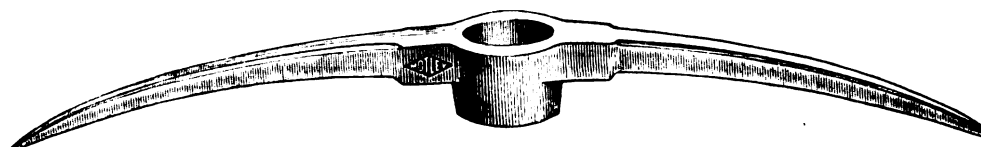


Fig. 1658.

8 to 9 lbs., solid cast steel, hand made..... per dozen, \$30.00

SHIP OR TOP MAUL.



Fig. 1660.

Solid Cast Steel.	
Per lb.	\$0.42

GRUB HOE.



Fig. 1661.

Width of cut, ins.	3	3½	4	4½
Per doz.	\$10.50	11.00	11.50	12.00

RAILROAD MAUL.



Fig. 1662.

Solid Cast Steel.	
6 to 12 lbs. per lb.	\$0.30

PICK  
MATTOCK.

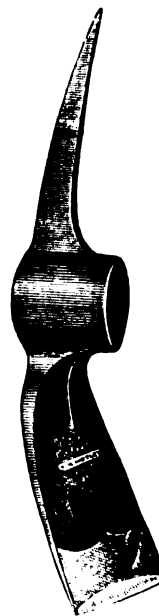


Fig. 1663.

Pick Mattocks.	
Per doz.	\$16.00

## HOES, RAKES, FORKS, ETC.

PLANTERS' HOE.  
American Pattern.

Fig. 1664.

Nos.	Width of Blade.	Bright. Per Doz.	Half Bright. Per Doz.
00	6½ ins.	\$6.00	\$5.50
0	7 "	6.25	5.75
1	7½ "	6.50	6.00
2	8 "	7.00	6.50
3	8½ "	7.50	7.00
4	9 "	8.00	7.50

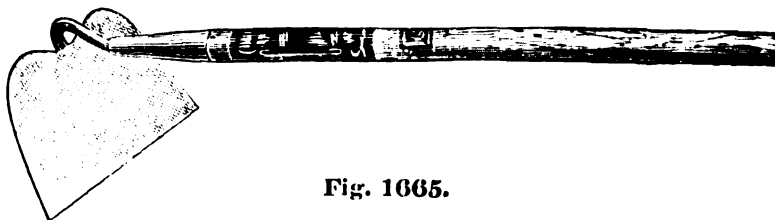
FIELD HOE.  
Solid Shank.

Fig. 1665.

Solid Shanks.		Per Doz.	Solid Sockets.		Per Doz.
Cast steel, 6½ to 8 in. blade...		\$8.00	Cast steel, 6½ to 8 in. blade...		\$9.00

PLANTERS' HOE.  
South American Pattern.

Fig. 1666.

Nos.	Width of Blade.	Bright. Per Doz.	Half Bright. Per Doz.
00	6½ ins.	\$6.25	\$5.75
0	7 "	6.50	6.00
1	7½ "	6.75	6.25
2	8 "	7.25	6.75
3	8½ "	7.75	7.25
4	9 "	8.25	7.75

## MORTAR AND STREET HOE.



Fig. 1667.

Solid Shanks.

No. 6, 10 inch blade, 6 foot handle.....	per dozen, \$13.00
" 7, 9 " " 6 " " .....	" 12 00

Handled Planters' Hoes,  
"Heavy"—Standard.

Style of Fig. 1667.

Cast Steel, Solid Shank.

Nos.	Width of Blade.	Length of Handle.	Per Dozen.
00	6½ ins.	5½ ft.	\$10.00
0	7 "	5½ "	10.50
1	7½ "	5½ "	11.00
2	8 "	5½ "	11.50
3	8½ "	5½ "	12.00
4	9 "	5½ "	12.50

## GARDEN RAKE.

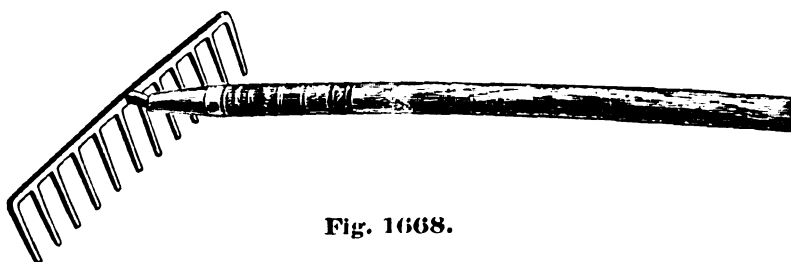


Fig. 1668.

Cast Steel, Gold Bronze Finish.

No. 1, sixteen teeth, full polished .....	per dozen, \$12.00
" 2, fourteen " " .....	" 11.00
" 3, twelve " " .....	" 10.00
" 4, ten " " .....	" 9.00
" 5, eight " " .....	" 8.00
" 6, six " " .....	" 6.00

Handled Planters' Hoes,  
"Light Weight."

Style of Fig. 1667.

Cast Steel, Solid Shank.

Nos.	Width of Blade.	Length of Handle.	Per Dozen.
00	6½ ins.	5½ ft.	\$9.50
0	7 "	5½ "	10.00
1	7½ "	5½ "	10.50
2	8 "	5½ "	11.00
3	8½ "	5½ "	11.50
4	9 "	5½ "	12.00

ORE AND STONE  
FORK.

Fig. 1670.

## SCREENING SHOVEL OR SCOOP.

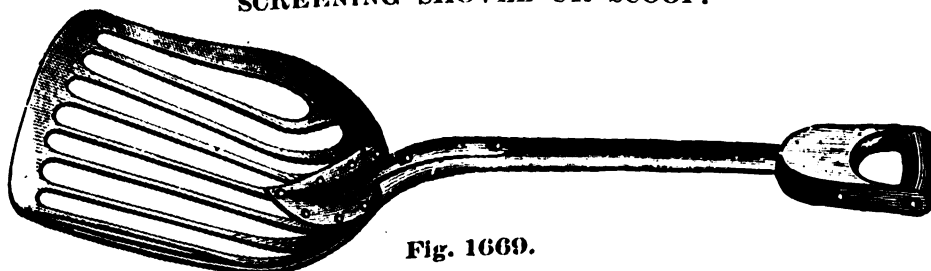


Fig. 1669.

These shovels are made of best malleable iron, are very strong and durable, and are great labor saving coal and ash screeners. Every factory, foundry, machine shop, or other place where coal is used in any considerable quantity should have one or more of these shovels.

Per dozen ..... \$25.00

## Prices Ore Forks, Fig. 1670.

8 tines, diamond.....	per dozen, \$20.00	8 tines, square.....	per dozen, \$20.00
10 " " .....	25.00	10 " " .....	25.00

## Prices Coke Forks, Fig. 1671.

8 tines, diamond.....	per dozen, \$19.00	13 tines, diamond.....	per dozen, \$31.00
9 " " .....	22.00	14 " " .....	33.00
10 " " .....	24.00	16 " " .....	40.00
12 " " .....	28.00		

## Prices Coal Forks, Fig. 1671.

Made heavier than coke forks, and less space between the tines.

10 tines, diamond.....	per dozen, \$25.00	12 tines, diamond.....	per dozen, \$29.00
------------------------	--------------------	------------------------	--------------------

COKE AND COAL  
FORK.

Fig. 1671.

## SHOVELS AND SPADES.

L.H. Plain Back, Round Point Shovel. D. H. Back Strap, Square Point Shovel. D. H. Plain Back, Square Point Shovel. Patent Malleable Handle Tamping Shovel. D. H. Plain Back, Round Point Shovel. D. H. Back Strap, Round Point Shovel. L.H. Plain Back, Square Point Shovel.



Fig. 1672.

D.H. Plain Back, Square Point Moulders' Shovel, Solid Cast Steel.



Fig. 1679.



Fig. 1673.



Fig. 1674.

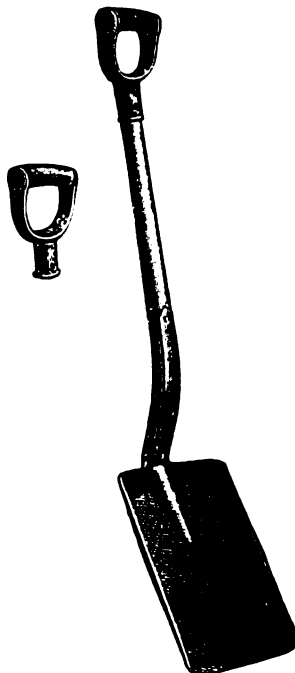


Fig. 1675.



Fig. 1676.



Fig. 1677.

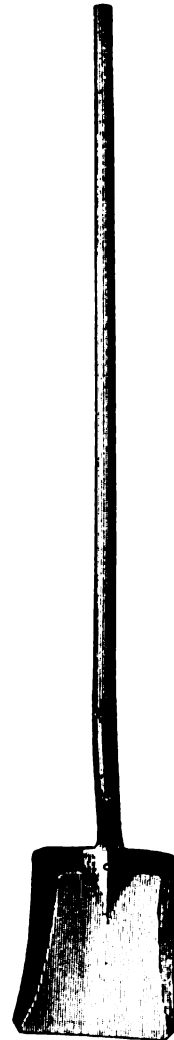


Fig. 1678.

D. H. Plain Back Spade, Solid Cast Steel.



Fig. 1681.

## T. N. Motley's Solid Cast Steel Back Strap Shovels.

Size numbers	1	2	3	4	5	6	7	8
D. Handle, Square Point, Polished.....per dozen,	\$11.50	11.50	12.00	12.75	13.50	14.25	14.75	15.50
"    Round    "    "    "    "    "    "    "    "		12.00	12.50	13.50				
Long Handle, Square Point, "    "    "    "    "    "    "    "    "	11.50	11.50	12.00	12.75	13.50			
"    Round    "    "    "    "    "    "    "		11.50	11.50	12.25				

Black Shovels 50 cents per dozen less.

## T. N. Motley's Solid Cast Steel Patent Plain Back Shovels.

D. Handle, Square Point, Polished.....per dozen,	12.50	13.00
"    Black....."    "	11.75	12.50
"    Round Point, Polished....."    "	13.00	13.50
"    Black....."    "	12.50	13.00
Long Handle, Square or Round, Polished "    "	12.50	13.00
"    Black "    "	11.75	12.50

## J. H. P. Solid Cast Steel Patent Plain Back Shovels.

D. Handle, Square Point, Polished.....per dozen,	11.50	12.00
"    Black....."    "	10.75	11.25
"    Round Point, Polished....."    "	12.00	12.50
"    Black....."    "	11.50	12.00
Long Handle, Square or Round, Polished "    "	11.50	12.00
"    Black....."    "	10.75	11.25

## Sanders' Cast Steel Back Strap Shovels.

D. Handle, Square Point, Polished.....per dozen,	7.50	7.50	8.00	8.50	9.25	9.75	10.50
"    Round    "    "    "    "    "    "    "		8.00	8.50	9.00			
Long Handle, Square Point, "    "    "    "    "    "    "    "	7.50	7.50	8.00	8.50	9.25		
"    Round    "    "    "    "    "    "    "		7.50	7.50	8.00			

Black Shovels 50 cents per dozen less.

## Vulcan Iron Back Strap Shovels.

D. Handle, Square Point, Polished.....per dozen,	4.75	5.00	5.75
"    Round    "    "    "    "    "    "    "		5.00	5.25
Long Handle, Square or Round, Polished "    "	4.75		

Black Shovels 50 cents per dozen less.

## Patent Tamping Shovels, Fig. 1675.

T. N. Motley's Solid Cast Steel, No. 2.....per doz.,	\$13.50
J. H. P. Solid Cast Steel, No. 2....."    "	12.50

## Moulders' Shovels, Fig. 1679.

Solid Cast Steel, Back Strap, No. 2.....per doz.,	\$11.50
"    Plain Back, No. 2....."    "	12.50

## T. N. Motley's Solid Cast Steel Spades.

Size numbers	1	2	3	4
D. Handle, Back Strap, Polished.....per dozen,	\$11.50	11.50	12.25	13.00
"    Black....."    "	11.00	11.00	11.75	12.50
"    Plain Back, Polished....."    "	12.50	12.50	13.25	
"    Black....."    "	11.75	11.75	12.50	
Long Handle, Back Strap, Polished "    "	11.50	11.50	12.25	
"    Black....."    "	11.00	11.00	11.75	
"    Plain Back, Polished....."    "	12.50	12.50	13.25	
"    Black....."    "	11.75	11.75	12.50	

## Telegraph Spoon for Digging Post Holes.

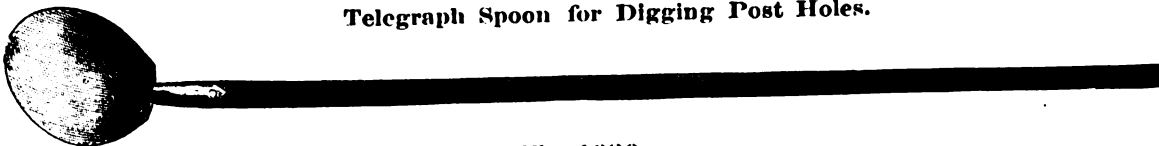


Fig. 1680.

Size, 10x8 1/4 inches; length of handle, 7 feet; Cast Steel, Black.....per dozen, \$9.00

## SHOVELS AND SCOOPS.

COAL SHOVEL.  
Western Pattern.

Fig. 1682.

## Western Pattern Coal Shovels.

BEST STEEL, HALF POLISHED.	
No. 2, D handle.....	per doz., \$8.75
" 3, ".....	9.00
BEST STEEL, BLACK.	
No. 2, D handle.....	per doz., \$8.50
" 3, ".....	8.75

## See Pattern Cast Steel Scoops.

Size Nos.....	2	3	4	5	6	7
Black.....	per dozen, \$17.00	17.75	18.50	19.25	21.50	22.00

## Furnace Scoops.

Steel, polished, D or long handle.....	per dozen, \$9.00
" half polished, ".....	8.00
Iron, black, ".....	7.00

## COAL SCOOPS.

## Regular Pattern.



Fig. 1683.

## See Pattern.

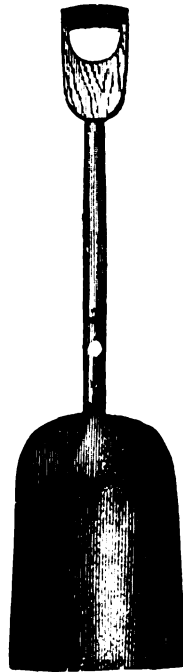


Fig. 1684.

## Regular Pattern.

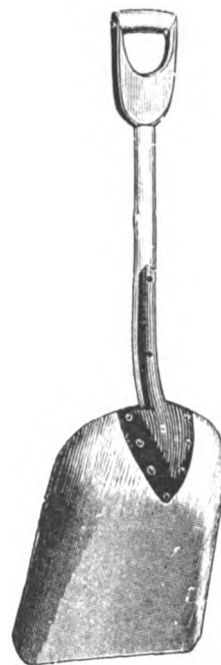


Fig. 1685.

## T. N. Motley's Cast Steel Scoops, Polished.

Size Nos.....	2	3	4	5	6	7	8	9	10
Per doz., \$13.50	13.75	14.25	14.50	15.00	15.50	16.00	16.75	17.50	

## Sanders' Steel Scoops, Polished.

Per doz., \$9.25	9.50	9.75	10.00	10.50	10.75	11.00	11.50	12.00
Half polished scoops, 25 cents less per dozen than polished.								
Black	"	50	"	"	"	"	"	"

## COFFEE SHOVEL.

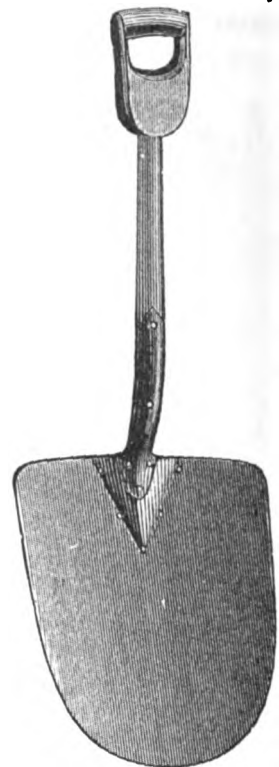


Fig. 1686.

## Coffee Shovels.

## EXTRA CAST STEEL, POLISHED.

No. 2, D or T handle.....	per doz., \$18.75
" 3, ".....	19.50
" 4, ".....	20.50
" 5, ".....	22.50
" 6, ".....	25.00

## Iron Scoops.

Size Nos.....	2	3	4	5	6	7	8
Black.....	per dozen, \$6.25	6.50	7.00	7.25	7.50	7.75	8.00

## Cast Steel Lime Shovels.

No. 4, black, D or long handle.....	per dozen, \$13.50
" 5, ".....	14.50
" 6, ".....	15.00

PATENT  
SOCKET STRAP  
SQUARE POINT  
SHOVEL.

Fig. 1687.

PATENT SOCKET STRAP SHOVELS, SPADES AND SCOOPS.  
PRICES.

## Patent Socket, Solid Cast Steel Shovels.

Size Nos.....	2	3	Size Nos.....	2	3
D handle, square point, polished.....	per doz., \$11.00	11.50	Long handle, square point, pol'd.....	per doz., \$11.00	11.50
" " " black.....	10.25	10.75	" " " black.....	10.25	10.75
" " round point, polished.....	11.25	11.75	" " round point, pol'd.....	11.00	11.50
" " " black.....	10.50	11.00	" " " black.....	10.25	10.75

## Patent Socket Strap, Back Strap, Cast Steel Shovels.

Size Nos.....	2	3	Size Nos.....	2	3
D handle, square point, polished.....	per dozen, \$11.50	12.00	Long handle, square point, pol'd.....	per doz., \$11.00	11.50
" " " black.....	12.00	12.50	" " " black.....	10.25	10.75
Long handle, ".....	11.50	12.25			

## Patent Socket Strap, Plain Back, Solid Cast Steel Spades.

Size Nos.....	2	3	Size Nos.....	2	3
D handle, square point, polished.....	per doz., \$11.00	11.50	Long handle, square point, pol'd.....	per doz., \$11.00	11.50
" " " black.....	10.25	10.75	" " " black.....	10.25	10.75

## Patent Socket Strap, Cast Steel Scoops.

Size Nos.....	2	3	4	5	6	7	8	9	10
D handle, polished.....	per dozen, \$9.75	10.25	10.75	11.25	11.75	12.25	12.75	13.25	13.75
" half polished.....	9.50	10.00	10.50	11.00	11.50	12.00	12.50	13.00	13.50

## Patent Socket Strap, Extra Heavy Cast Steel Coal Scoops.

Size Nos.....	2	3	4	5	6	7
D handle, half polished.....	per dozen, \$10.50	11.00	11.50	12.00	12.50	13.00
" black.....	10.25	10.75	11.25	11.75	12.25	12.75

## Patent Socket Strap, Solid Cast Steel Tamping Shovels.

Made with the improved patent malleable iron head, as shown in Fig. 1675.

No. 2, D handle, square point, black.....	per dozen, \$15.00
---	--------------------

PATENT  
SOCKET STRAP  
COAL  
SCOOP.

Fig. 1688.

POST HOLE TOOLS AND CANT HOOKS.

POST HOLE AUGER.

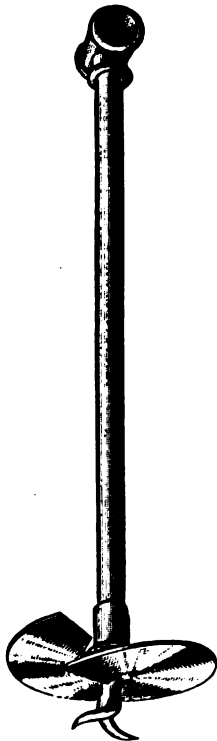


Fig. 1689.



Fig. 1690.

Patent Post Hole Auger, Fig. 1689.

Suitable for any soil. Reversible Blade.

Diameter, inches.....	4	5	6	7	8	9
Per doz.....	\$18.00	18.00	18.00	18.00	18.00	18.00

Extra Blades for above.

Diameter, inches.....	4	5	6	7	8	9
Per doz.....	\$10.00	10.00	10.00	12.00	12.00	12.00

The different size blades (from 4 to 9 inches) can be used on the same Auger, and the blade being reversible either cutting edge can be used. The whole length is 4 feet 2 inches.

Extra lengths can be easily screwed on.

SAMSON POST HOLE DIGGERS.



Fig. 1691.

CANT HOOK.

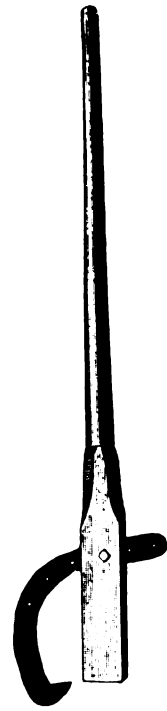


Fig. 1692.

Samson Post Hole Diggers, Figs. 1690 and 1691.

These tools have been thoroughly tested, and have given the greatest satisfaction to all who have tried them. The principle on which they work makes them self-cleaning, and prevents adhesion in sticky soil; therefore they always work free and easily. They are far superior to all plungers, augers and boring machines, as they work well in stony, sandy or clay soils; quicksand under water is as easily removed as though no water existed.

As constructed for ordinary use, they will dig readily four feet deep. Their durability will equal any tool made for the purpose, the blades being of the best cast steel. The steel blades are 9 inches long, and the whole tool 5 feet long.

Per dozen.....\$36.00

Cant Hooks, Fig. 1692.

With Steel Pointed Hooks.....	per doz.,	\$36.00
With all Steel Hooks.....	"	42.00

HICKORY HANDLES.

TURNED AXE HANDLE.



Fig. 1693.

Quality.....	Length, inches, 30 & 32	34 & 36	38	40
Extra.....	per dozen, \$2.50	2.85	3.00	3.25
Excelsior.....	"	1.90	2.20	2.25
No. 1.....	"	1.40	1.50	1.60
No. 2.....	"	1.20	1.30	1.85
No. 3.....	"	1.00	1.00	

SPANISH AXE HANDLE.



Fig. 1695.

Quality.....	Extra.	Excelsior.	No. 1.	No. 2.	No. 3.
Per dozen.....	\$2.85	2.20	1.50	1.30	1.00

BROAD AXE HANDLES.

Reversible, Right or Left Hand.

26 inches.....	per dozen, \$2.70
----------------	-------------------

SURFACE OR RAILROAD PICK HANDLE.

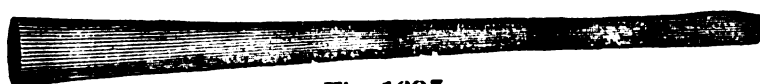


Fig. 1697.

Quality.....	36 inches.	Extra.	Excelsior.	No. 1.	No. 2.	No. A.
Per dozen.....	\$3.00	2.50	2.00	1.50	1.15	

DOUBLE BITTED AXE HANDLE.



Fig. 1694.

Quality.....	Length, inches, 32	34	36	38
Shaved, XXX.....	per dozen, \$3.00	3.00	3.00	3.50
Extra.....	"	2.50	2.85	3.00
Excelsior.....	"	1.90	2.20	2.25
No. 1.....	"	1.40	1.50	1.60
No. 2.....	"	1.20	1.30	

ADZE HANDLE.



Fig. 1696.

Carpenters', Ship and Railroad.....	Extra.	Excelsior.	No. 1.
Per dozen.....	\$3.00	2.40	1.50

BOYS' AXE HANDLES.

26 and 28 inches.....	Extra.	Excelsior.	No. 1.
Per dozen.....	\$1.85	1.65	1.10

DRIFTING AND POLL PICK HANDLES.

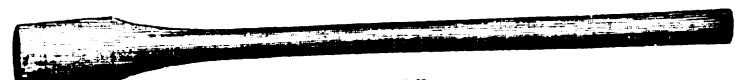


Fig. 1698.

Quality.....	32, 34 and 36 inches.	Extra.	Excelsior.	No. 1.
Per dozen.....	\$3.00	2.15	1.50	



## HANDLES.

## MAUL HANDLE.



Fig. 1699.

Length, inches	24	26	28	30	32	34	36	38	40
XX	per doz., \$1.66	1.66	1.66	2.00	2.10	2.25			
Extra	"	1.15	1.15	1.50	1.60	1.80	2.00	2.25	
No. 1	"	.90	.90	1.25	1.25	1.30	1.50	1.60	1.85
" 2	"	.88	.95	1.00	1.00	1.00	1.10		

## SLEDGE HANDLE.



Fig. 1700.

Length, inches	24	26	28	30	32	34	36	38	40
XX	per doz., \$1.66	1.66	1.66	2.00	2.10	2.25			
Extra	"	1.15	1.15	1.50	1.60	1.80	2.00	2.25	
No. 1	"	.90	.90	1.25	1.25	1.30	1.50	1.60	1.85
" 2	"	.88	.95	1.00	1.00	1.00	1.10		

## MACHINISTS' HAMMER HANDLE.



Fig. 1701.

Length, inches	11 & 12	14	15	16	18	20	22	24
Per dozen	\$0.60	.60	.60	.65	.80	.90	.95	1.05

## ADZE EYE HAMMER HANDLE.



Fig. 1702.

Length, 13 and 14 inches.....per dozen, \$0.50

## LOCK JAW FILE HANDLE.



Fig. 1703.

No. 1, for files 13 ins. and larger	per gross, \$6.00
" 2, " 9 ins. to 12 ins.	5.50
" 3, " 7 " 10 "	5.25
" 4, " 5 " 8 "	5.00
" 4 1/2, " 4 " 7 "	4.75
" 5, " 2 " 5 "	4.50
Assorted	5.00

## BLACKSMITHS' HAMMER HANDLES.

Same sizes and prices as Machinists' Hammer Handles, Fig. 1701.

## HATCHET HANDLE.



Fig. 1704.

Shingling Hatchet Handles.					
Length, 12, 13, 14 and 15 inches.....	per dozen, \$0.50				
Bench Hatchet Handles.					
Length, inches.....	15	16	17	18	19 & 20
Per dozen.....	\$0.55	.65	.75	.85	1.00

## COMMON FILE HANDLE.



Fig. 1705.

No. 21, soft wood, assorted, 4 sizes	per gross, \$4.00
" 23, " 2 large sizes	4.75
" 21, " large size only	5.50
" 25, cherry, assorted, 4 sizes	5.00
" 26, " 3 large sizes	5.50
" 27, rosewood, for jewelers' use	18.00
Handles with seamless iron ferrules, extra	1.00

## FIRMER CHISEL HANDLE.



Fig. 1706.

Hickory Firmer Chisel Handles.					
Nos. .... 31	33	35	36	37	
Assortment... 6 sizes.	4 large sizes.	2 large sizes.	Large size only.	Extra large.	
Per gross....\$6.50	7.50	8.50	9.00	11.00	
Apple Firmer Chisel Handles.					
Nos. .... 41	43	45	46	47	
Assortment... 6 sizes.	4 large sizes.	2 large sizes.	Large size only.	Extra large.	
Per gross.... \$8.00	8.50	9.50	10.00	12.00	

## SOCKET FIRMER CHISEL HANDLE.

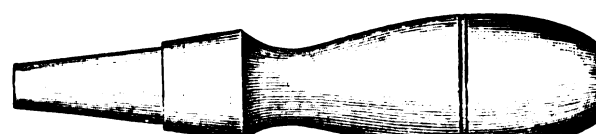


Fig. 1707.

Hickory Socket Firmer Chisel Handles.					
Nos. .... 51	53	55	56	57	
Assortment... 6 sizes.	4 large sizes.	2 large sizes.	Large size only.	Extra large.	
Per gross....\$5.25	5.75	6.00	6.50	7.00	
Apple Socket Firmer Chisel Handles.					
Nos. .... 61	63	65	66	67	
Assortment... 6 sizes.	4 large sizes.	2 large sizes.	Large size only.	Extra large.	
Per gross....\$6.50	7.50	8.00	8.50	10.00	

## SOCKET FRAMING CHISEL HANDLE.

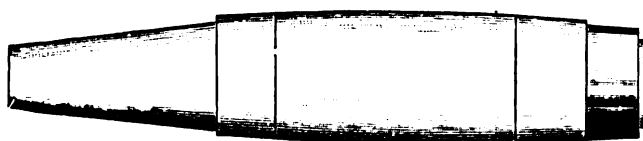


Fig. 1708.

Hickory Socket Framing Chisel Handles.					
Nos. .... 71	73	75	76		
Assortment... 6 sizes.	4 large sizes.	2 large sizes.	Large size only.	Extra large.	
Per gross....\$8.50	8.75	9.25	10.00		

## SCREW DRIVER HANDLE.

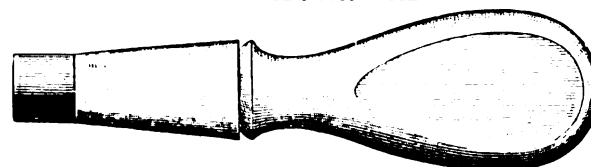


Fig. 1709.

Screw Driver Handles, Brass Ferrule.			
Nos. .... 11	17	18	
Assortment... 8 sizes.	2 large sizes.	Large size only.	
Per gross....\$12.00	14.00	15.00	

## SAW HANDLE.

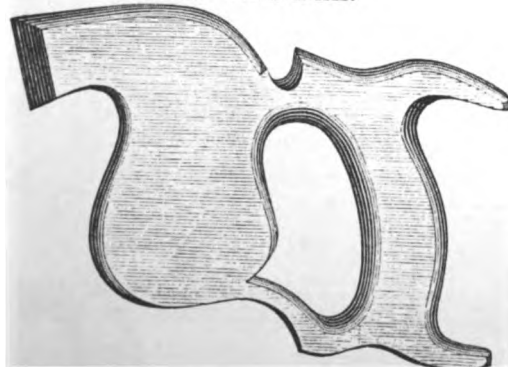


Fig. 1710.

## Saw Handles.

No. 2, plain beech	per dozen, \$1.20
" 3, polished and varnished	1.40
" 18, " for panel saws	1.35

## JACK PLANE HANDLE.



Fig. 1711.

## FORE PLANE HANDLE.

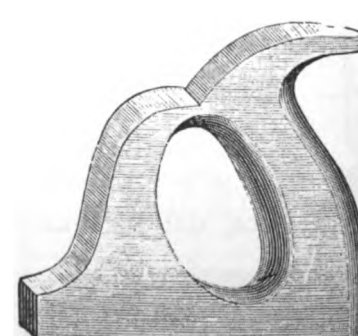


Fig. 1712.

## Plane Handles.

Jack Plane Handles, Fig. 1711	per gross, \$5.00
Fore " " " 1712	9.00

# AUGER HANDLES, AWL HANDLES, ETC.

## THUMB NUT AUGER HANDLE.



Fig. 1713.

With hollow shanks, for augers  $\frac{1}{2}$  to 2 inches.

No. 4, ..... per dozen, \$6.00

## PATENT AUGER HANDLE.



Fig. 1714.

No. 2, in sets of two, holding any size auger. .... per set, \$1.50  
" 2 $\frac{1}{2}$ , all large size ..... per dozen, 12.00

## COMMON AUGER HANDLE.

### Common Auger Handles.

Assorted, all sizes. .... per gross, \$6.00

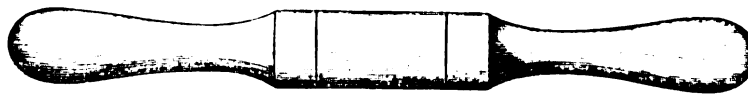


Fig. 1715.

### Common Auger Handles.

Assorted, large. .... per gross, \$7.00

## PATENT PEG AWL HAFT.



Fig. 1716.

No. 49, plain top. .... per dozen, \$1.00  
" 51, leather top. .... " 1.25

## BRAD AWL HAFT.

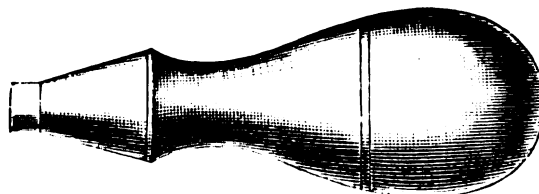


Fig. 1717.

Assorted sizes, brass ferrules. .... per gross, \$5.00

## PATENT SEWING AWL HAFT.



Fig. 1718.

No. 46, short nut. .... per dozen, \$1.25  
" 47, long " ..... " 2.65

## HANDLED SCRATCH AWL.

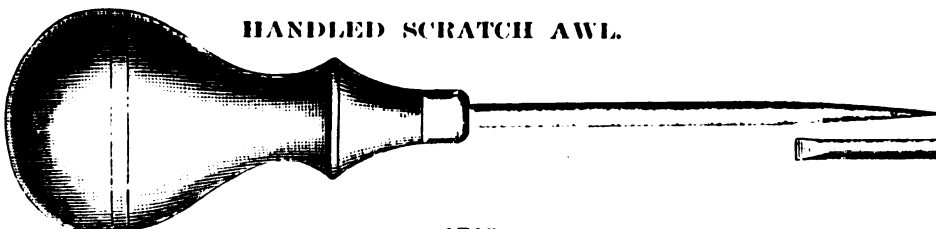


Fig. 1719.

No. 0, Cast steel, assorted. .... per gross, \$12.00  
" 1, " " large ..... " 14.00

## HANDLED BRAD AWL.

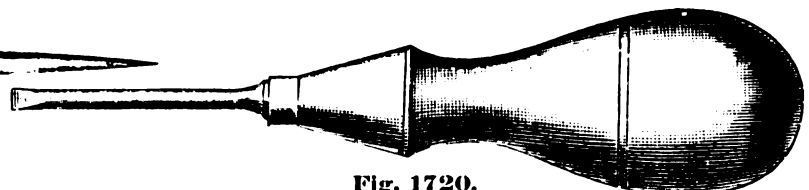


Fig. 1720.

No. 12, cast steel, assorted. .... per gross, \$11.25  
" 14, " " large ..... " 12.60

## PATENT PEG AWL.



Fig. 1721.

No. 41, assorted ..... per gross, \$0.95

## PATENT SEWING AWL.

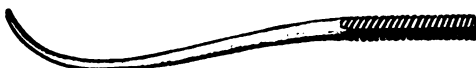


Fig. 1722.

No. 51, assorted ..... per gross, \$2.75

## SADDLERS' AWL.

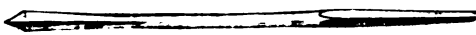


Fig. 1723.

No. 55, assorted. .... per gross, \$3.25

## CHALK LINE REEL.

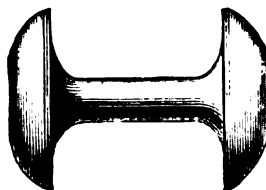


Fig. 1724.

### Prices, Plain Chalk Line Reels.

No. 1, without awls. .... per dozen, \$0.40

### Prices, Chalk Line Reels, with Awls.

No. 10, with awls. .... per dozen, \$1.10

## SHOULDERED PEG AWL.



Fig. 1725.

No. 43, assorted ..... per gross, \$3.75

## COMMON SEWING AWL.

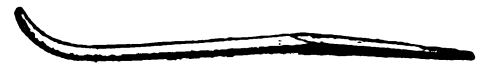


Fig. 1726.

No. 53, assorted ..... per gross, \$2.75

## SHOULDERED BRAD AWL.

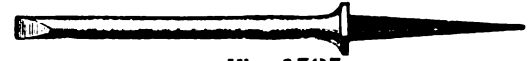


Fig. 1727.

No. 33, assorted ..... per gross, \$1.50

## AIKEN'S PATENT AWLS AND TOOLS.

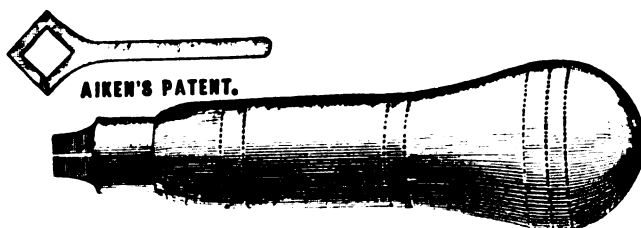


Fig. 1728.

### Prices, Aiken's Genuine Awls and Tools.

Warranted highest grade of cast steel.

No. 10, patent handle, with 10 brad awls. .... per dozen, \$7.50  
" 20, " " 10 brad awls and 10 tools. .... " 10.00

### Prices, Extra Awls and Tools for Aiken's Handles.

Extra brad awls only, assorted, Nos. 1 to 10. .... per gross, \$1.00

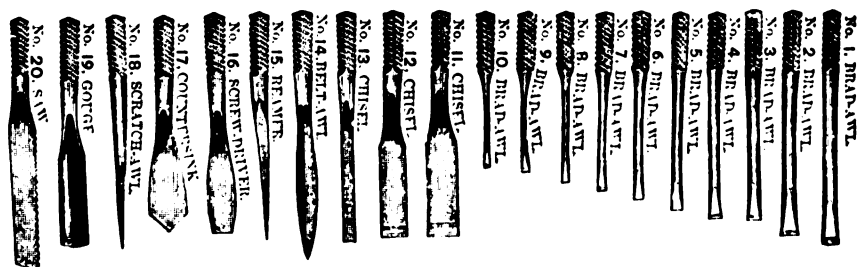


Fig. 1729.

### Prices, Aiken's Pattern Awls and Tools.

Warranted superior cast steel.

No. 110, patent handle, with 10 brad awls. .... per dozen, \$6.00  
" 120, " " 14 brad awls and 6 tools ..... " 7.00

Extra tools only, assorted, Nos. 11 to 20. .... per gross, \$5.00

## CIRCULAR SAW MANDREL.

When ordering saw mandrels, send sketch and give distance from saw to end of mandrel, if the pulley is between the bearings. If the pulley is on the end of mandrel, give distance from saw to inside edge of pulley.

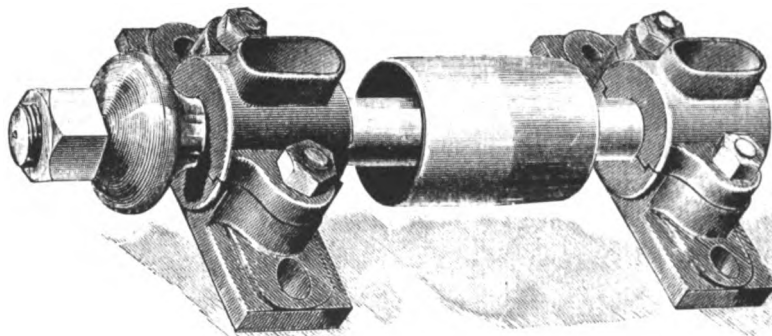


Fig. 1730.

Also state whether the pulley is on the right or left hand side of mandrel, when the saw is running toward you. Mandrels are made with pulleys on right hand side, with left hand thread, unless otherwise ordered.

## Prices, Pulley Between the Boxes.

No.	Diameter of Pulley.	Face of Pulley.	Diameter of Flange.	Length of Shaft.	Diameter of Shaft.	Size of Hole in Saw.	Each.
1	2½ ins.	3½ ins.	2½ ins.	14 ins.	1½ ins.	1 in.	\$7.00
2	3 "	4 "	3 "	16 "	1½ "	1¼ "	8.00
3	3½ "	4½ "	3½ "	18 "	1½ "	1½ "	8.50
4	4 "	5 "	4 "	20 "	1½ "	1½ "	9.75
5	4½ "	5½ "	4½ "	22 "	1½ "	1½ "	11.00
6	5 "	6 "	5 "	24 "	1½ "	1½ "	12.50
7	5½ "	6½ "	5½ "	26 "	1½ "	1½ "	13.75
8	6 "	7 "	6 "	28 "	1½ "	1½ "	15.50
9	7 "	8 "	6 "	32 "	1½ "	1½ "	21.50
10	8 "	8 "	6 "	36 "	1½ "	1½ "	25.75

## Prices, Pulley on the End.

No.	Diameter of Pulley.	Face of Pulley.	Diameter of Flange.	Length of Shaft.	Diameter of Shaft.	Size of Hole in Saw.	Each.
1	2½ ins.	3½ ins.	2½ ins.	16½ ins.	1½ ins.	1 in.	\$7.70
2	3 "	4 "	3 "	19 "	1½ "	1¼ "	8.50
3	3½ "	4½ "	3½ "	21½ "	1½ "	1½ "	9.00
4	4 "	5 "	4 "	24 "	1½ "	1½ "	10.75
5	4½ "	5½ "	4½ "	26 "	1½ "	1½ "	12.00
6	5 "	6 "	5 "	28 "	1½ "	1½ "	13.75
7	5½ "	6½ "	5½ "	30½ "	1½ "	1½ "	15.00
8	6 "	7 "	6 "	32½ "	1½ "	1½ "	17.00
9	7 "	8 "	6 "	37 "	1½ "	1½ "	23.50
10	8 "	8 "	6 "	41 "	1½ "	1½ "	28.00

## CIRCULAR SAWS.

Left Hand Saw.

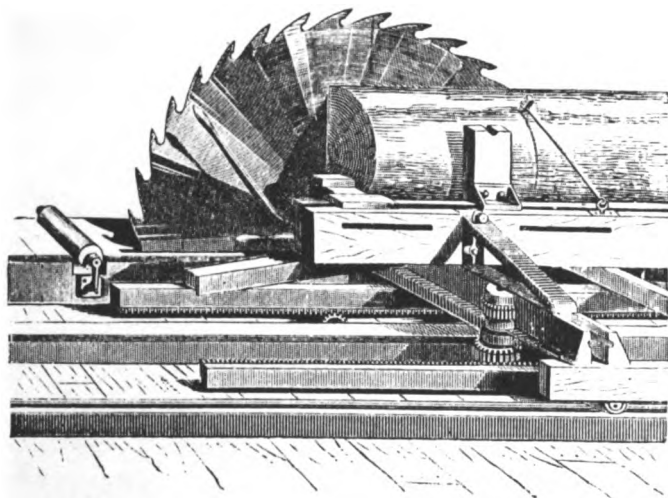


Fig. 1731.

Right Hand Saw.

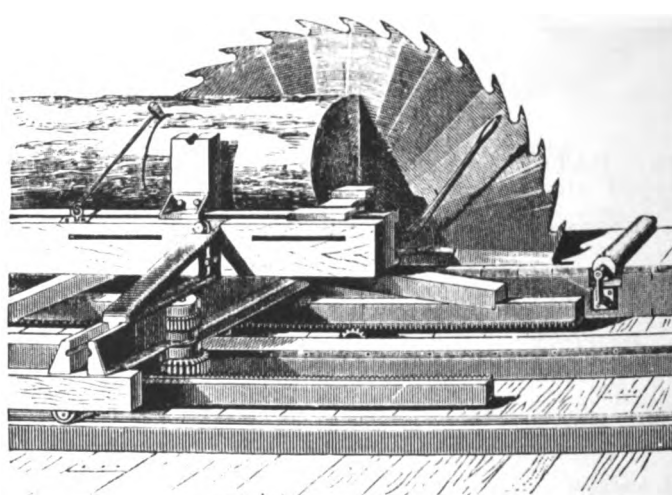


Fig. 1732.

When ordering circular saws the following directions should be explicitly given: Diameter in inches; thickness or gauge at rim; thickness or gauge at center; right or left hand (see cuts above); number of teeth; kind or number of tooth; size of mandrel hole; size of pin hole; distance between pin holes from center to center; greatest feed at each revolution, in inches; kind of lumber to be sawed; number of revolutions per minute.

When ordering saws always state whether rip or cross cut.

Diam., Inches.	Gauge.	Size of Hole, Inches.	Each.	Extra for Each Gauge Heavier.	Price for Beveling New Saws, Per Gauge.	Diam., Inches.	Gauge.	Size of Hole, Inches.	Each.	Extra for Each Gauge Heavier.	Price for Beveling New Saws, Per Gauge.	Diam., Inches.	Gauge.	Size of Hole, Inches.	Each.	Extra for Each Gauge Heavier.	Price for Beveling New Saws, Per Gauge.
1	24	¾	\$0.50	\$0.01	\$0.06	16	14	1¼	\$5.50	\$0.25	\$0.50	48	8	2	\$70.00	\$1.00	\$2.80
1½	24	¾	.55	.01	.07	18	13	1¼	7.00	.30	.60	50	7	2	80.00	1.50	3.00
2	23	¾	.60	.01½	.08	20	13	1½	8.50	.35	.70	52	7	2	90.00	5.00	3.25
2½	22	¾	.65	.02	.09	22	12	1½	10.00	.45	.80	54	7	2	100.00	6.00	3.50
3	21	¾	.70	.02½	.10	24	11	1½	12.00	.55	.90	56	7	2	115.00	7.00	3.75
3½	20	¾	.80	.03	.12	26	11	1½	14.50	.65	1.05	58	7	2	130.00	8.00	4.05
4	19	¾	.90	.03	.14	28	10	1½	16.00	.80	1.20	60	6	2	145.00	9.00	4.35
5	19	¾	1.10	.04	.16	30	10	1½	18.00	.90	1.30	62	6	2	160.00	10.00	4.65
6	18	¾	1.30	.05	.18	32	10	1½	20.00	1.00	1.40	64	6	2	180.00	12.00	5.00
7	18	¾	1.50	.06	.20	34	9	1½	22.50	1.20	1.55	66	6	2	200.00	15.00	5.35
8	18	¾	1.75	.08	.22	36	9	1½	25.50	1.40	1.70	68	5	2	225.00	18.00	5.75
9	17	¾	2.00	.10	.25	38	9	1½	30.00	1.75	1.85	70	5	2	255.00	21.00	6.15
10	16	1	2.30	.12	.28	40	9	2	35.00	2.00	2.00	72	5	2	290.00	24.00	6.55
11	16	1	2.65	.14	.30	42	8	2	40.00	2.50	2.20	74	5	2	330.00	27.00	7.00
12	15	1	3.00	.17	.35	44	8	2	52.50	3.00	2.40	76	5	2	375.00	30.00	7.50
14	15	1½	4.50	.21	.40	46	8	2	60.00	3.50	2.60						

**SAWS.**  
**MILL SAW.**

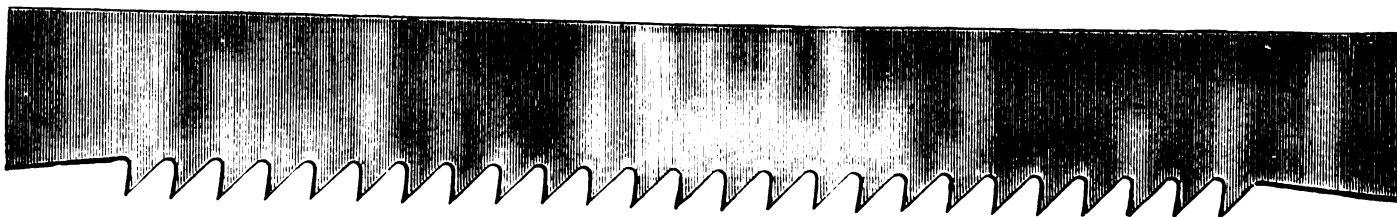


Fig. 1733.

Gauge of Saw, Nos.	5	6	7	8	9
Per foot.....	\$1.50	1.40	1.30	1.20	1.10

**MULAY SAWS.**

Gauge of Saw, Nos.	4	5	6	7	8	9
10 inches wide.....	per foot, \$2.15	2.00	1.85	1.65	1.50	1.35
11 ".....	" 2.40	2.20	2.05	1.85	1.60	1.45
12 ".....	" 2.65	2.40	2.25	2.00	1.80	1.60

**GANG SAWS.**

Nos. 10 and 11 gauge,	8 inches wide.....	per foot, \$1.00	9 inches wide.....	per foot, \$1.10	10 inches wide.....	per foot, \$1.20
" 12 and 13 "	8 ".....	" .95	9 ".....	" 1.05	10 ".....	" 1.15
" 14 and 15 "	8 ".....	" .90	9 ".....	" 1.00	10 ".....	" 1.10

**PLAIN  
TOOTH  
CROSS-CUT  
SAW.**

**EXTRA TEMPERED PIT SAW.**

**CHAMPION  
TOOTH  
CROSS-CUT  
SAW.**

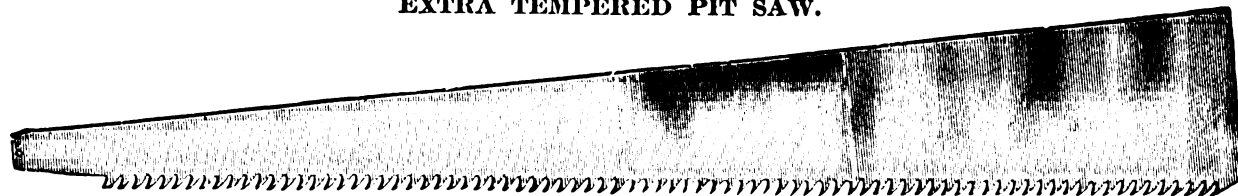


Fig. 1734.

Length, feet.....	5	5 $\frac{1}{2}$	6	6 $\frac{1}{2}$	7	7 $\frac{1}{2}$	8
Each.....	\$5.00	5.50	6.00	6.50	7.00	7.50	8.00
Box for Pit Saws.....	each, \$1.00		Tiller for Pit Saws.....	each, \$1.25			

**WHIP SAWS.**

Length, feet.....	5	5 $\frac{1}{2}$	6	6 $\frac{1}{2}$	7	7 $\frac{1}{2}$
Each.....	\$3.00	3.30	3.60	3.90	4.20	4.50

**TRIUMPH NARROW CROSS-CUT SAW.**  
**With Handles Complete.**

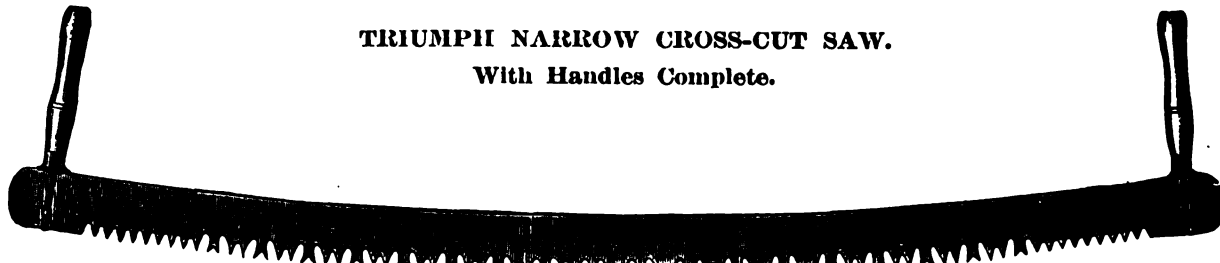


Fig. 1735.

These Saws have been made for years, and their utility for cutting down trees can best be told by their use. They are not so liable to bind by kerf-closing as the wider patterns of saws.

Complete, with two loop handles..... per foot, \$0.44

**Prices, Plain Tooth Cross-Cut Saws, Fig. 1736.**

No. 1.....	per foot, \$0.68	No. 2.....	per foot, \$0.60	No. 3.....	per foot, \$0.52
------------	------------------	------------	------------------	------------	------------------

**Prices, Champion Tooth Cross-Cut Saws, Fig. 1738.**

No. 1.....	per foot, \$0.68	No. 2.....	per foot, \$0.60	No. 3.....	per foot, \$0.52
------------	------------------	------------	------------------	------------	------------------

**CROSS-CUT SAW HANDLES.**

Plain Handles.....	per pair, \$0.12	Patent Loop Handles.....	per pair, \$0.40
--------------------	------------------	--------------------------	------------------

**CHAMPION TOOTH ONE MAN CROSS-CUT SAW.**

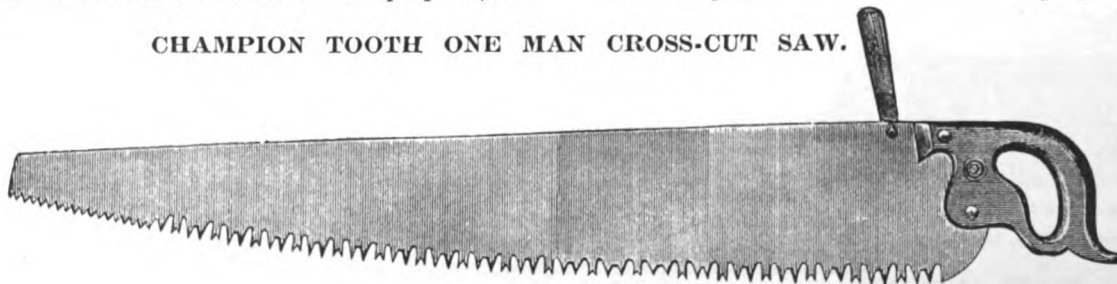


Fig. 1737.

Length, feet.....	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$	5	5 $\frac{1}{2}$	6
Each.....	\$2.10	2.35	2.60	3.15	3.50	3.85	4.25	4.65

Fig. 1738.

Fig. 1736.

**PANEL SAW, No. 8D.**  
Skew Back.

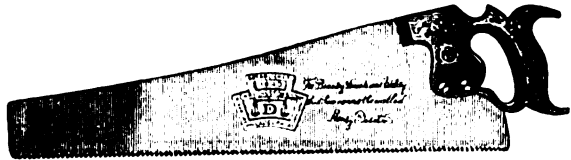


Fig. 1739.

**SAWS.**

**HAND SAW, No. 7.**  
Style of Nos. 00, 1, 3, 8 and 107.

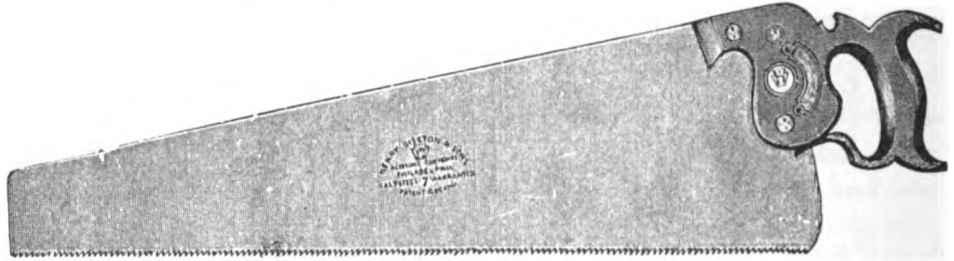


Fig. 1740.

**Prices, Hand, Panel and Rip Saws.**

WARRANTED CAST STEEL. PATENT TEMPERED AND GROUND.									
No. 00, Beech Handle, Polished Edge.									
Sizes, inches...	12	14	16	18	20	22	24	26	28
Per dozen.....	\$4.50	5.00	5.50	6.00	6.50	7.00	7.50	8.00	9.00
No. 1, Beech Handle, Polished Edge, Grained Blade.									
Sizes, inches...	14	16	18	20	22	24	26	28	30
Per dozen...	\$6.50	7.50	8.00	9.00	10.00	11.00	12.00	14.00	16.00
No. 3, Beech Handle, Polished Edge, 4 Rivets, Grained Blade, etched, full width.									
Sizes, inches...	14	16	18	20	22	24	26	28	30
Per dozen...	\$7.00	8.00	9.00	10.00	11.00	12.00	13.00	16.00	19.00
No. 107, Beech Handle, Polished Edge, 4 Rivets, Grained Blade, Cast Steel, warranted. This Saw etched to order.									
Sizes, inches...	14	16	18	20	22	24	26	28	30
Per dozen...	\$8.00	9.00	10.00	11.25	12.50	14.00	15.00	18.00	21.00

WARRANTED CAST STEEL. PATENT TEMPERED AND GROUND.									
No. 7, Cast Steel, Warranted, Beech Handle, Polished Edge, 4 Improved Screws, Grained Blade.									
Sizes, inches...	14	16	18	20	22	24	26	28	30
Per dozen...	\$12.00	13.00	14.00	16.00	18.00	19.00	20.00	23.50	27.00
WARRANTED SPRING STEEL. PATENT TEMPERED AND GROUND.									
No. 8, Spring Steel, Warranted, Apple Handle, Polished Edge, 4 Improved Screws, Grained Blade.									
Sizes, inches.....	16	18	20	22	24	26	28	30	
Per dozen.....	\$13.50	14.50	16.50	18.50	20.00	21.00	24.00	28.00	
No. 8D, Spring Steel, Warranted, Skew Back, Apple Handle, Polished Edge, 5 Improved Screws.									
Sizes, inches.....	16	18	20	22	24	26	28	30	
Per dozen.....	\$14.50	16.00	17.50	19.50	21.00	22.00	25.00	28.00	

**EXCELSIOR HAND SAW.**

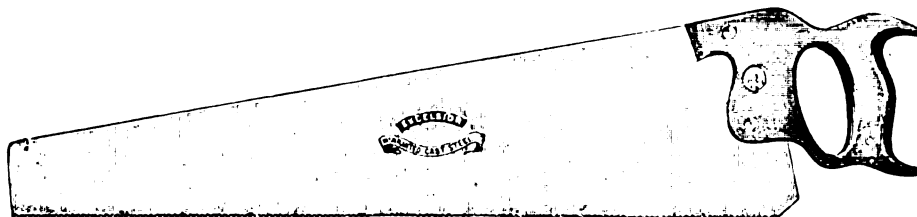


Fig. 1741.

**Prices, Excelsior Hand Saws.**

**Fig. 1741.**

Beech Handle, Polished Edge, with 3 Brass Screws Set and Sharpened.					
Sizes, inches.....	12	14	16	18	20
Per dozen.....	\$3.20	3.60	4.00	4.40	4.80
Sizes, inches.....	22	24	26	28	30
Per dozen.....	\$5.20	5.60	6.00	7.50	8.50

This Saw is etched to order.

**Prices, Motley Hand Saws.**

**Fig. 1742.**

Cherry Handle, Polished Edge, 4 Brass Screws, Full Width, Warranted and Cross Filed.				
Sizes, inches.....	16	18	20	22
Per dozen.....	\$10.00	11.00	12.00	13.00
Sizes, inches.....	24	26	28	
Per dozen.....	\$14.50	16.00	18.00	

**MOTLEY HAND SAW.**



Fig. 1742.

**ENTERPRISE HAND SAW.**

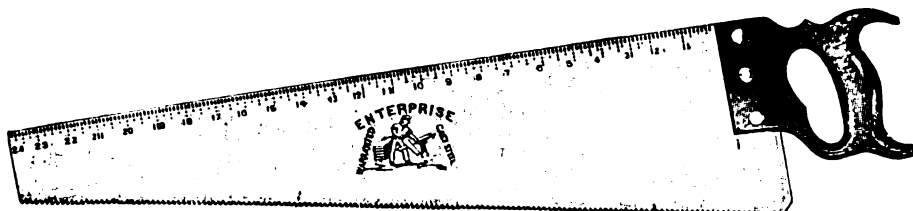


Fig. 1743.

**Prices, Enterprise Hand Saws.**

**Fig. 1743.**

Beech Handle, Polished Edge, 3 Brass Screws, Etched Rule, Set and Sharpened.		
Sizes, inches .....	20	26
Per dozen.....	\$6.00	7.50

This Saw etched to order.

**BACK SAW.**

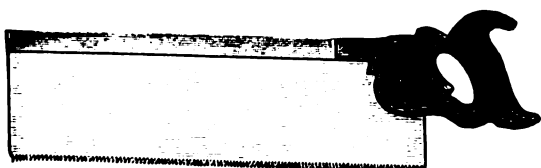


Fig. 1744.

**PRUNING SAW.**



Fig. 1745.

No. 4, Apple Handle, Polished Edge, Blued Back.						
Sizes, inches.....	8	10	12	14	16	18
Per dozen.....	\$13.00	14.00	16.00	18.00	20.00	22.00
No. 7, Apple Handle, Polished Edge, Polished Steel Back.						
Sizes, inches.....	8	10	12	14	16	18
Per dozen.....	\$14.00	15.00	17.00	19.00	21.00	23.00
No. 3, Beech Handle, Polished Edge, 3 Rivets, Grained Blade.						
Sizes, inches.....	12	14	16	18	20	22
Per dozen.....	\$5.50	6.00	6.75	7.50	8.25	9.00
No. 7, Cast Steel, Warranted, Apple Handle, Polished Edge, 3 Rivets, Grained Blade.						
Sizes, inches .....	12	14	16	18	20	22
Per dozen.....	\$8.00	8.50	9.00	10.00	11.00	12.00
Sizes, inches.....	24	26				
Per dozen.....	13.00	14.00				



SAWS, SAW RODS, ETC.

COMPASS SAW.



Fig. 1746.

Cast Steel, Apple Handle.					
Sizes, inches.....	10	12	14	16	18
Per dozen.....	\$4.25	4.50	4.75	5.00	5.25

KEY HOLE SAW AND PAD.



Fig. 1747.

Complete.....	per dozen, \$2.50
Key Hole Saws.....	" 1.25
Handles.....	" 1.25

KITCHEN SAW, No. 0.



Fig. 1748.

No. 0, Oval Back.			
Sizes, inches.....	12	14	16
Per dozen.....	\$6.50	7.00	7.50

Keystone, Flat Back.

Sizes, inches.....	12	14	16
Per dozen.....	\$7.50	8.00	8.50

STEEL BACK BUTCHERS' SAW.

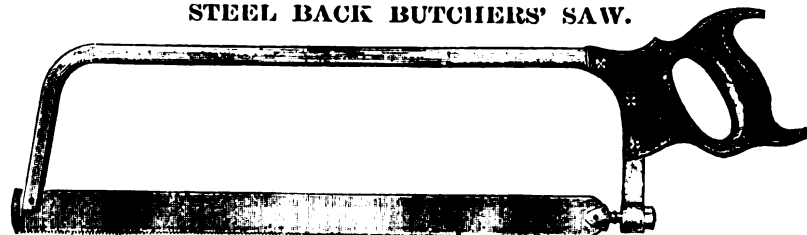


Fig. 1749.

No. 1, Oval Back.							
Sizes, inches.....	12	14	16	18	20	22	24
Per dozen.....	\$14.50	15.25	16.00	17.00	18.00	19.00	20.00

Butchers' Saw Blades.  
3 1/4 to 1 1/4 inches wide, inclusive.

Length, inches.....	12	14	16	18	20	22	24
Per dozen.....	\$4.50	4.75	5.00	5.25	5.50	5.75	6.00

FRAMED WOOD SAW.



Fig. 1750.

Red Frame.

Complete, with special No. 6 blade.....per dozen, \$11.00

FRAMED WOOD SAW.

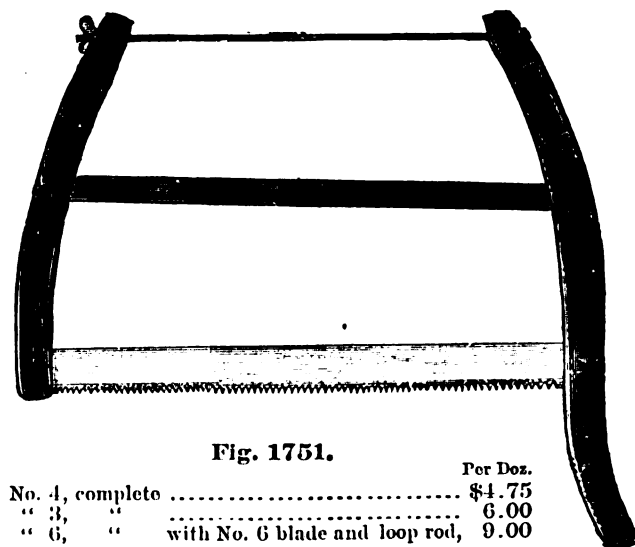


Fig. 1751.

No. 4, complete.....	Per Doz. \$4.75
" 3, ".....	6.00
" 6, " with No. 6 blade and loop rod,	9.00

WOOD SAW BLADES, ALL SET AND SHARPENED.

Length, inches.....	30	32	Length, inches.....	30	32
No. 3, plain tooth.....	per dozen, \$3.75	4.00	No. 9, plain tooth.....	per dozen, \$6.50	7.00
" 4, ".....	2.75	3.00	" 9, peg.....	" 7.00	7.50
" 6, ".....	6.00	6.50	" 11, plain.....	" 9.00	9.50
" 6, round breasted.....	6.00	6.50	" 11, peg.....	" 9.50	10.00

WOOD SAW FRAMES.

White frames, straight bar.....	per dozen, \$1.40	Red frames, straight bar.....	per dozen, \$2.00
---------------------------------	-------------------	-------------------------------	-------------------

CLIPPER SAW ROD.



Fig. 1752.

Length, inches.....	20	21	22	23	24	26
Per dozen.....	\$1.82	1.85	1.88	1.92	1.95	2.00

COMMON BRASS  
SAW SCREW.



Fig. 1753.

Full size cut of No. 1.

No. 1.....	per gross, \$4.50
" 2.....	" 5.00

IMPROVED PRUNING SAW AND KNIFE.

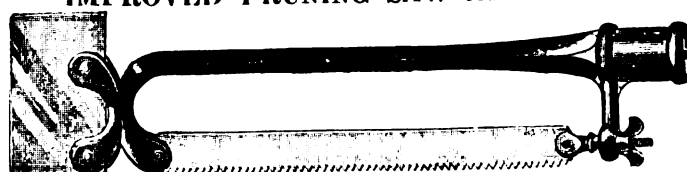


Fig. 1754.

Japanned frame.....	per dozen, \$11.00	Tinned frame.....	per dozen, \$13.50
---------------------	--------------------	-------------------	--------------------

EAGLE BRASS  
SAW SCREW.



Fig. 1755.

Full size cut of No. 3.

No. 3.....	per gross, \$8.00
" 4.....	" 10.00

## HACK SAWS, SAW SETS, ETC.

## STAR HACK SAW.

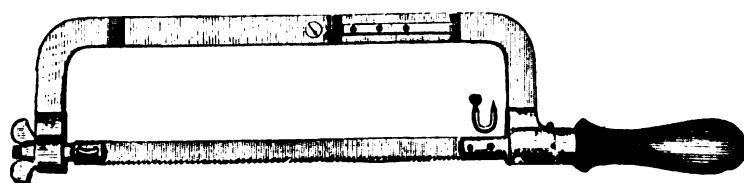


Fig. 1756.

## Prices, Steel Frames Only.

No. 1, Extension Frame, nickel plated .....	per dozen, \$9.60
No. 2, Solid Frame, nickel plated .....	" 8.40

## Prices, Blades Only.

Length, inches .....	6	7	8	9
Per dozen .....	\$0.55	.60	.65	.70

The Extension Frames will hold the four sizes of blades. The Solid Frames will hold only the 8 inch blade.

## GRIFFIN HACK SAW.

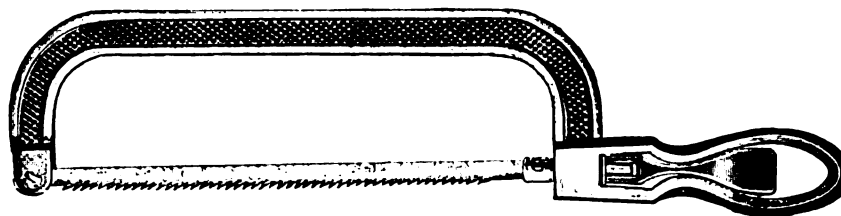


Fig. 1757.

## Prices, Frames Complete, with 12 Blades Each.

Length, inches .....	6	7	8	9
Per dozen .....	\$14.00	15.00	16.00	17.00

## Prices, Blades Only.

Length, inches .....	6	7	8	9
Per gross .....	\$9.25	10.00	10.50	11.25

The tension is regulated by the lever in the open handle. The blade is secured by two pins, which may be readily detached.

## CONQUEROR SAW SWAGE.

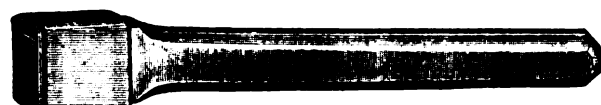


Fig. 1758.

No. 1, for large circular saws .....	each, \$3.00
" 2, for small " .....	" 2.50
" 3, for band and small circular saws .....	" 2.00

## Prices, Aiken's Hammer Saw Sets, Fig. 1759.

No. 1, Aiken's Genuine, warranted .....	per doz., \$13.00
" 5, " Pattern .....	" 9.00
" 25, " " .....	" 8.00

## AIKEN'S HAMMER SAW SET.

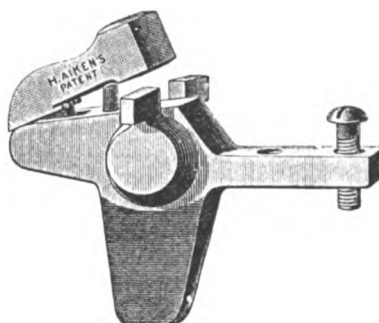


Fig. 1759.

## COMMON LEVER SAW SET.

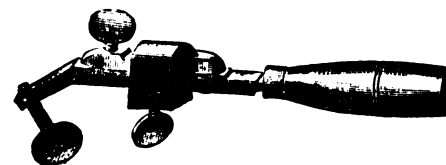


Fig. 1760.

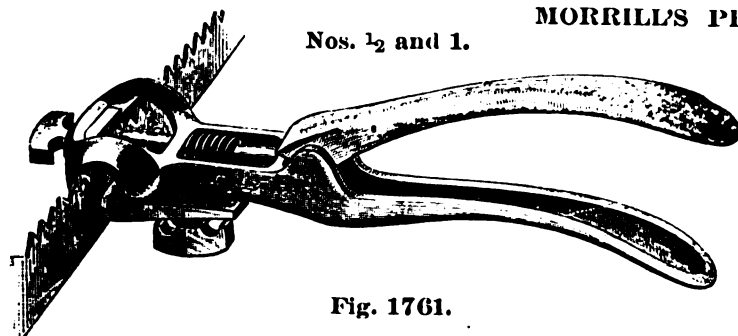
Lever Saw Sets .....

per doz., \$2.00
------------------

## STILLMAN'S LEVER SAW SETS.

Stillman's Saw Sets .....	per doz., \$5.00
Stillman's Cross-Cut Saw Sets .....	" 7.75

## MORRILL'S PERFECT SAW SETS.



Nos. 1/2 and 1.

Fig. 1761.

No. 1/2, for band, scroll and jig saws, from No. 32 to 16 gauge .....	per doz., \$15.00
No. 1, for hand saws of every description, from No. 32 to 16 gauge .....	" 15.00
No. 3, for single tooth cross-cut and small circular saws, from No. 20 to 14 gauge .....	" 24.00

Nos. 3 and 4.

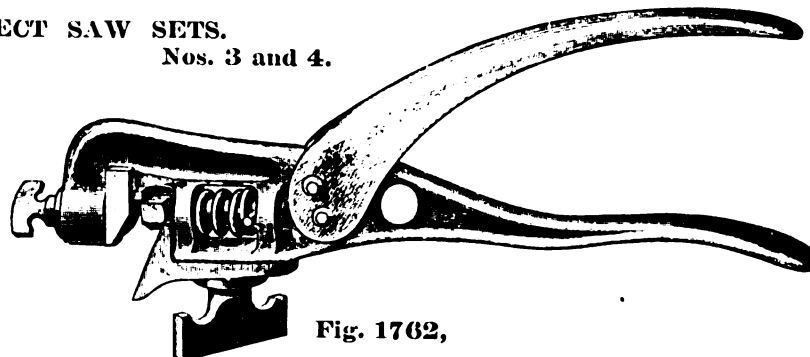


Fig. 1762.

No. 4, for champion or M tooth cross-cut saws, from No. 22 to 14 gauge .....	per doz., \$24.00
No. 5, for board and timber saws, and all kinds of re-saws from No. 14 to 6 gauge .....	" 52.00

## MITRE BOX.



Fig. 1763.

The frame is made of hard wood of the best quality selected for the purpose, and made from boards one inch thick, and consists of two upright pieces, which are fastened rigidly to the edges of a bottom board. Has adjustable iron saw guides for any thickness of saw blade. The saw cannot cut the frame away.

No. 1 will saw moulding 1 1/2 x 3 ins. ....	each, \$1.00
No. 2 " " 2 1/2 x 4 " ....	" 1.50

## MORRILL'S PERFECT BENCH HOOK.

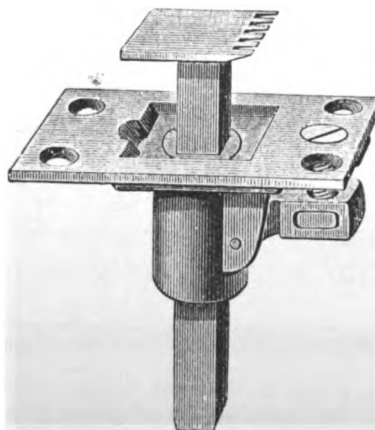


Fig. 1764.

This is one of the most substantial and reliable Bench Hooks made.

Per dozen .....	\$9.00
-----------------	--------

## IMPROVED MITRE BOX.

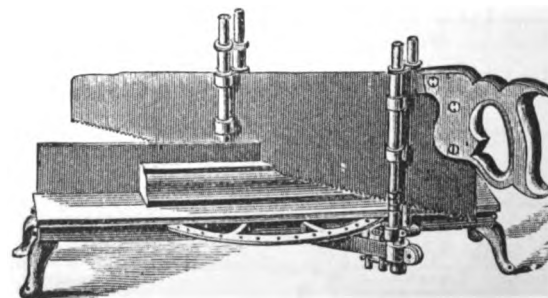


Fig. 1765.

The frame is made of a single casting, and is subject to no change of position, being finished accurately at first, it must always remain true. The slot in the back of the frame, through which the saw passes, is only three-eighths of an inch wide, thereby obviating any liability to push short pieces of work through the slot when the saw is in motion.

Mitre Box, 20 inches, without saw .....	each, \$7.00
Mitre Box, 20 ins., with 20 in. back saw .....	" 10.00

# CHISELS, GOUGES AND DRAWING KNIVES.

## EXTRA TANG FIRMER CHISEL.



Fig. 1766.

Inch.....	1-8	3-16	1-4	5-16	3-8	1-2	9-16	5-8
Per dozen.....	\$2.00	2.00	2.00	2.00	2.13	2.25	2.60	2.60
Inch.....	3-4	7-8	1	1 1-8	1 1-4	1 1-2	1 3-4	2
Per dozen.....	\$2.75	3.00	3.50	4.50	5.00	6.00	7.50	9.00

### Assorted, in Sets.

1/8 to 2 inches, 12 chisels.....	per set, \$1.25
Handled.....	
For handling, add to the list.....	per dozen or set, \$1.25

## EXTRA TANG FIRMER GOUGE.



Fig. 1767.

Inch.....	1-8	1-4	3-8	1-2	5-8	3-4
Per dozen.....	\$2.25	2.50	2.63	2.88	3.00	3.25
Inch.....	7-8	1	1 1-4	1 1-2	1 3-4	2
Per dozen.....	\$3.50	4.50	6.00	7.50	10.00	12.00

### Assorted, in Sets.

1/8 to 2 inches, 12 gouges.....	per set, \$6.00
Handled.....	
For handling, add to the list.....	per dozen or set, \$1.25

## EXTRA SOCKET FRAMING CHISEL.



Fig. 1768.

Inch.....	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2
Per doz.....	\$12.00	12.00	12.00	13.00	14.00	15.00	16.00	18.00	20.00	22.00	24.00	

### Prices, Extra Socket Framing Chisels.

#### Assorted in Sets.

Fig. 1768.

Not sharpened.

1/4 to 2 inches, 12 chisels.  
1 each of above sizes, also 1/8 inch.

Per set.....\$18.00

1/4 to 2 inches, 9 chisels.  
1 each 1/4, 3/8, 1/2, 5/8, 3/4, 1, 1 1/4, 1 1/2 and 2 inches.

Per set.....\$14.00

1/4 to 2 inches, 6 chisels.  
1 each 1/4, 1/2, 3/4, 1, 1 1/2 and 2 inches.

Per set.....\$10.00

## SET OF EXTRA SOCKET FIRMER CHISELS, IN BOX.



Fig. 1770.

Solid cast steel, 6 inch blade. Set and sharpened ready for use.

12 chisels in set, 1 each 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches, in wood box, as shown in cut.....per set, \$5.00

## EXTRA SOCKET CORNER CHISEL.



Fig. 1771.

Inch.....	1/2	3/4	1	1 1/8	1 1/4
Per dozen.....	\$22.00	28.00	30.00	32.00	36.00
Inches.....	2 1/2	3	3 1/2	4	
Per dozen.....	\$40.00	44.00	52.00	60.00	

### Carpenters' Slicks.

## EXTRA SOCKET FIRMER GOUGE.



Fig. 1772.

Inch.....	1/2	3/4	1	1 1/8	1 1/4	1 1/2	1 3/4	2
Per dozen.....	\$5.00	5.75	6.00	7.00	8.00	8.50	9.50	10.50

### Assorted in Sets.

1/8 to 2 inches, 12 gouges, 1 each of above sizes.....per set, \$10.00

1/4 " 2 " 8 " 1 " 1/4, 1/2, 3/4, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inches.....7.50

## FOLDING AND ADJUSTABLE HANDLE DRAWING KNIFE.



Fig. 1773.

Instantly adjusted. Every blade warranted.

The width of blade is 1 1/8 inches on all sizes; and the knife when folded up is 2 inches wide by 11 1/2, 12 3/4 and 14 inches long respectively.

### Prices, Fig. 1773.

Inches.....	6	7	8
Per dozen.....	\$21.00	22.50	24.00

Cut shows knife folded up.

## CARPENTERS' REGULAR DRAWING KNIFE.

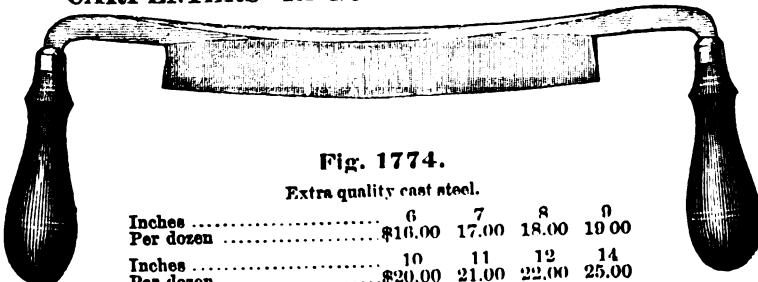


Fig. 1774.

Extra quality cast steel.

Inches.....	6	7	8	9
Per dozen.....	\$16.00	17.00	18.00	19.00
Inches.....	10	11	12	14
Per dozen.....	\$20.00	21.00	22.00	25.00

## RAZOR BLADE DRAWING KNIFE.

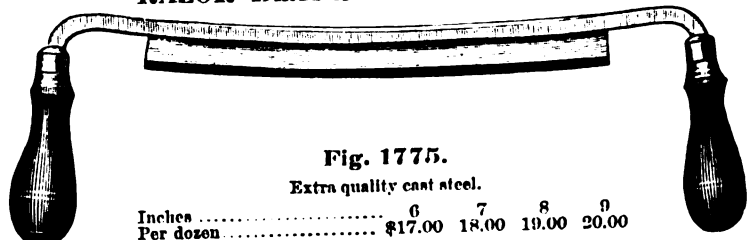


Fig. 1775.

Extra quality cast steel.

Inches.....	6	7	8	9
Per dozen.....	\$17.00	18.00	19.00	20.00
Inches.....	10	11	12	14
Per dozen.....	\$21.00	22.00	23.00	26.00

## SPOKE SHAVES, BOX SCRAPERS AND PLANES.

### IRON SPOKE SHAVES.

Single Cutter.



Fig. 1776.

Single Iron .....per dozen, \$2.00    Double Iron.....per dozen, \$2.50

Double Cutter.

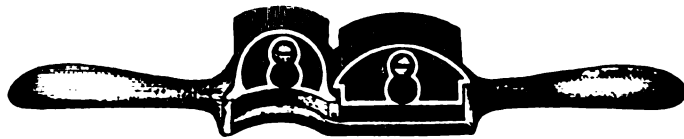


Fig. 1777.

Concave and Straight Irons in one stock.....per dozen, \$3.50

Double Iron, Straight Handle.



Fig. 1778.

10 inches, 2 1/8 inch cutter .....per dozen, \$3.50

Adjustable, Raised Handle.



Fig. 1779.

10 inches, 2 1/8 inch cutter .....per dozen, \$4.50

Adjustable, Straight Handle.

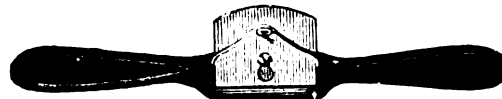


Fig. 1780.

10 inches, 2 1/8 inch cutter .....per dozen, \$4.50

### WOOD SPOKE SHAVES.

Beech, Plain, No. 80.

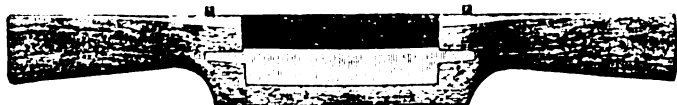


Fig. 1781.

	No. 80.			
Inches .....	2 1/2	3	3 1/2	4
Per dozen .....	\$3.25	3.75	4.25	4.75

	No. 85, same as No. 80, but Brass Plated.			
Inches .....	2 1/2	3	3 1/2	4
Per dozen .....	\$4.25	4.75	5.25	5.75

Beech, Plated, Screw Iron, No. 95.

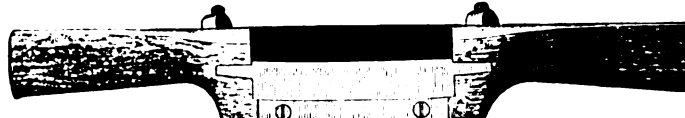


Fig. 1782.

	No. 95.			
Inches .....	2 1/2	3	3 1/2	4
Per dozen .....	\$9.00	9.50	10.00	10.50

### CHAMFER SPOKE SHAVE.

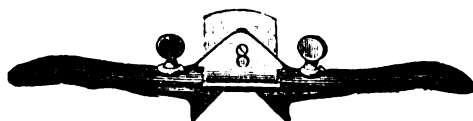


Fig. 1783.

This tool can be easily adjusted by means of the thumb screws attached to the guides, and will chamfer an edge any desired width up to 1 1/2 inches.

Raised Handles, 1 1/2 inch cutter .....per dozen, \$6.00

### UNIVERSAL HAND BEADER.



Fig. 1784.

This tool is invaluable to wood workers for beading, roeding or fluting straight or irregular surfaces.

Iron Stock, with gauge and 6 steel cutters .....each, \$1 00

Single Handle.

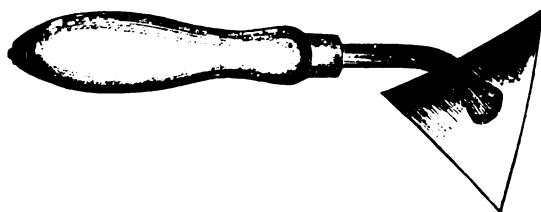


Fig. 1785.

No. 1, Cast steel .....	per dozen, \$6.00
" 11, " .....	" 5.00

### BOX SCRAPERS.

#### Patent Adjustable.



Fig. 1786.

This is an excellent box scraper, and is also well adapted for planing floors.

Malleable iron, 2 in. steel cutter...	per doz., \$6.00
Extra cast steel cutters .....	" 1.50

Double Handle.

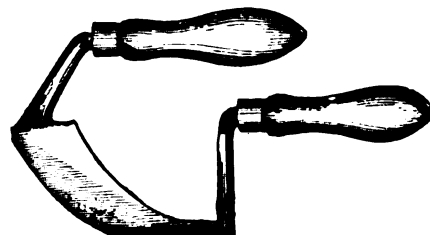


Fig. 1787.

No. 2, Cast steel .....	per dozen, \$9.00
" 12, " .....	" 6.75

### IRON BLOCK PLANES.

No. 120.



Fig. 1788.

No. 120, Block Planes.  
Adjustable by means of lever.  
7 1/2 in. long, 1 3/4 in. cutter each, \$0.85

No. 110, Block Planes.  
Same as the No. 120, but without lever adjustment.  
7 1/2 in. long, 1 3/4 in. cutter each, \$0.60

No. 102.



Fig. 1789.

No. 102, Block Planes.  
Not Adjustable.  
5 1/2 in. long, 1 1/4 in. cutter each, \$0.40

No. 103, Block Planes.  
Adjustable by means of lever.  
5 1/2 in. long, 1 1/4 in. cutter each, \$0.60

No. 101.



Fig. 1790.

No. 101, Block Planes.  
Not Adjustable.  
3 1/2 in. long, 1 in. cutter.. each, \$0.20

PLANE IRONS.  
For No. 101 .....per doz., \$0.75  
" 102 & 103 ....." 1.50  
" 110, 120 & 130 ....." 2.00

No. 130.

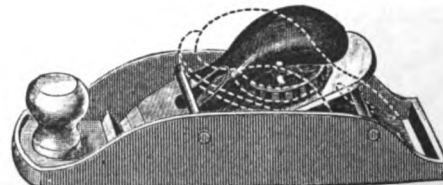
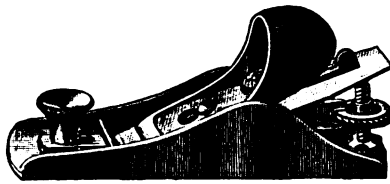


Fig. 1791.

No. 130, Block Planes.  
This Plane has two slots and two cutter seats. It can be used as a block plane, or by reversing cutter as indicated by dotted line in cut, it will plane close up into corners, etc.  
8 in. long, 1 3/4 in. cutter.. each, \$0.80

**BAILEY'S PATENT ADJUSTABLE PLANES.**

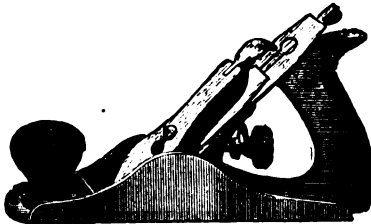
**EXCELSIOR BLOCK PLANE.**



**Fig. 1792.**

No. 9 $\frac{1}{2}$ , 6 ins. long, 1 $\frac{3}{4}$ in. cutter.....	Each. \$1.50
" 15, 7 " " 1 $\frac{3}{4}$ " " .....	1.60

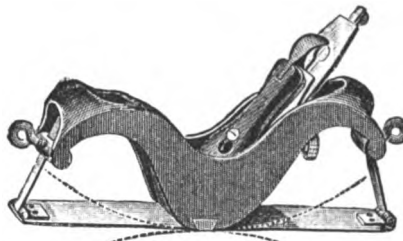
**SMOOTH PLANE.**



**Fig. 1795.**

No. 1, Smooth Plane, 5 $\frac{1}{2}$ ins., 1 $\frac{1}{4}$ in. cutter, .....	Each. \$2.25
" 2, " 7 " 1 $\frac{3}{8}$ " " .....	2.75
" 3, " 8 " 1 $\frac{3}{4}$ " " .....	3.00
" 4, " 9 " 2 " " .....	3.25
" 4 $\frac{1}{2}$ , " 10 " 2 $\frac{3}{8}$ " " .....	3.75

**CIRCULAR PLANE.**



**Fig. 1793.**

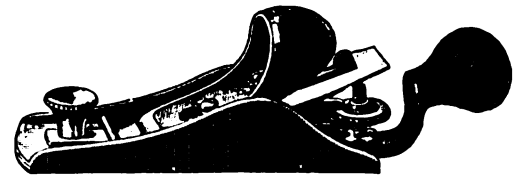
No. 13, Circular Plane, 1 $\frac{3}{4}$  in. cutter...each, \$4.00

This plane has a flexible steel face, and by means of thumb screws at each end of the stock can be easily adapted to plane circular work, either concave or convex.

**No. 113. Adjustable Circular Plane.**  
1 $\frac{3}{4}$  inch cutter.....each, \$4.00

This plane has a flexible steel face, which can be easily shaped to any required arc, either concave or convex, by turning a knob on the front of the plane. The knob is attached to a double acting screw, which moves two levers properly connected by gears, thus controlling accurately both ends of the flexible face. By the peculiar construction of the plane a smaller arc, either concave or convex, can be obtained by this plane than by any other similar tool.

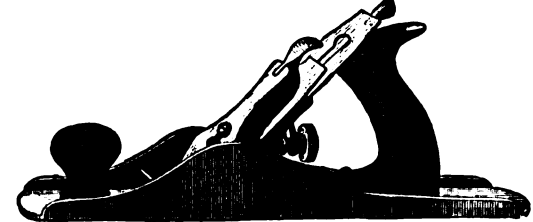
**EXCELSIOR BLOCK PLANE, WITH HANDLE.**



**Fig. 1794.**

No. 9 $\frac{3}{4}$ , 6 ins. long, 1 $\frac{3}{4}$ in. cutter.....	Each. \$1.75
" 15 $\frac{1}{2}$ , 7 " " 1 $\frac{3}{4}$ " " .....	1.85

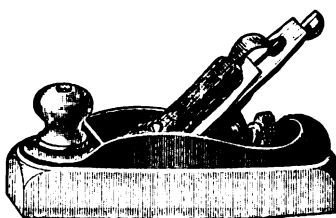
**JACK PLANE.**



**Fig. 1796.**

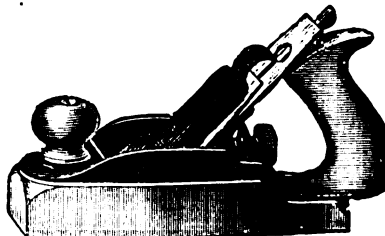
No. 5, Jack Plane, 14 ins., 2 in. cutter, .....	Each. \$3.75
" 6, Fore " 18 " 2 $\frac{3}{8}$ " " .....	4.75
" 7, Jointer " 22 " 2 $\frac{3}{8}$ " " .....	5.50
" 8, " " 24 " 2 $\frac{5}{8}$ " " .....	6.50
" 9, Block " 10 " 2 " " .....	6.50

**SMOOTH PLANE, WOOD BOTTOM. HANDLED SMOOTH PLANE, WOOD BOTTOM.**



**Fig. 1797.**

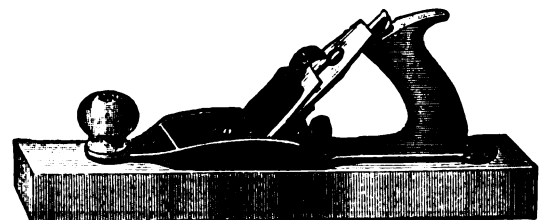
No. 21, Smooth Plane, 7 ins., 1 $\frac{3}{4}$ in. cutter, .....	Each. \$2.00
" 22, " " 8 " 1 $\frac{3}{4}$ " " .....	2.00
" 23, " " 9 " 1 $\frac{3}{4}$ " " .....	2.00
" 24, " " 8 " 2 " " .....	2.00
" 25, Block " 9 $\frac{1}{2}$ " 1 $\frac{3}{4}$ " " .....	2.00



**Fig. 1798.**

<b>Handled Smooth Planes.</b>	
No. 35, 9 ins., 2 in. cutter .....	Each. \$2.50
" 36, 10 " 2 $\frac{3}{8}$ " " .....	2.75
<b>Jenny Smooth Plane.</b>	
No. 37, 13 ins., 2 $\frac{5}{8}$ in. cutter .....	Each. \$3.00

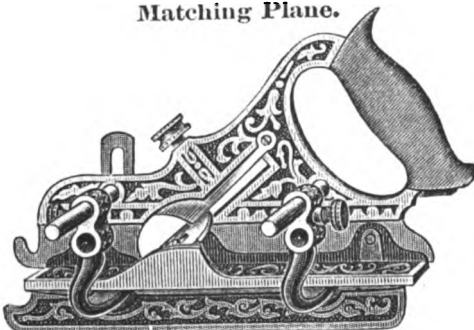
**JACK PLANE, WOOD BOTTOM.**



**Fig. 1799.**

No. 26, Jack Plane, 15 ins., 2 in. cutter, .....	Each. \$2.25
" 27, " " 15 " 2 $\frac{1}{8}$ " " .....	2.50
" 29, Fore " 20 " 2 $\frac{3}{8}$ " " .....	2.75
" 30, Jointer " 22 " 2 $\frac{3}{8}$ " " .....	3.00
" 33, " " 28 " 2 $\frac{5}{8}$ " " .....	3.25

**Miller's Combined Plow, Filletster and Matching Plane.**



**Fig. 1800.**

Including plow bits, slitting blade and tonguing tool.  
No. 41, iron stock and fence .....each, \$9.00  
" 42, gun metal stock and fence .... " 12.00

**Miller's Combined Plow & Matching Plane**  
Including plow bits, slitting blade and tonguing tool.

No. 43, iron stock and fence .....each, \$7.00  
" 44, gun metal stock and fence .... " 10.00

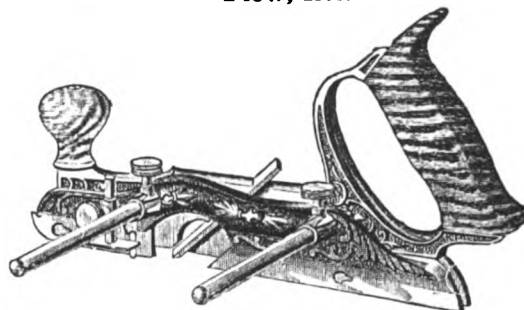
**Patent Duplex Rabbet Plane & Filletster.**

This plane is made with two cutter seats, and can be used as a rabbet or bull nose rabbet plane, or as a right or left hand filletster.

No. 78, iron stock and fence, 8 $\frac{1}{2}$  inches in length, 1 $\frac{1}{2}$  inch cutter .....each, \$1.50

NOTE.—The several sets of Bits, etc., which accompany the Planes (Nos. 41, 42, 43, 44, 45 and 46) are now put up in wooden boxes, which protect the cutting edges and keep the full assortment of tools always convenient for selection by the owner.

**PATENT COMBINATION PLANES.**  
**Traut's Adjustable Dado, Filletster, Plow, Etc.**



**Fig. 1801.**

Including plow bits, slitting blade and tonguing tool.

No. 46, iron stock and fence.....each, \$7.00

**Traut's Adjustable Dado.**

Including bits (3 $\frac{1}{2}$ , 5 $\frac{1}{8}$ , 7 $\frac{1}{8}$  and 1 $\frac{1}{4}$  inch) and slitting blade.

No. 47, iron stock and fence.....each, \$4.00

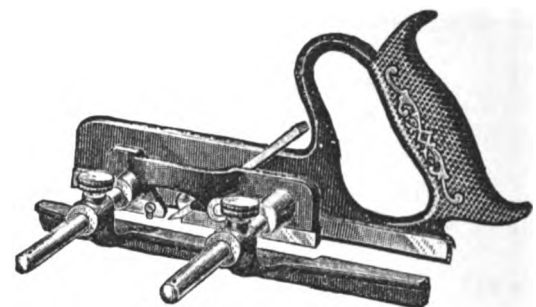
**Traut's Adjustable Beading, Rabbet and Slitting Plane.**

Including beading tools, bits, slitting blade, etc.  
No. 45, iron stock and fence.....each, \$8.00

This plane embraces in a compact and practical form, (1) Beading and Center Beading Plane; (2) Rabbet and Filletster; (3) Dado; (4) Plow; (5) Matching Plane; and (6) a superior Slitting Plane.

(Nos. 41, 42, 43, 44, 45 and 46) are now put up in wooden boxes, which protect the cutting edges and keep the full

**Patent Adjustable Beading Plane.**



**Fig. 1802.**

Including bits,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1, 1 $\frac{1}{8}$ , 1 $\frac{1}{4}$  and  $\frac{1}{2}$  inch.

No. 50, iron stock and fence.....each, \$4.00

This tool, for ordinary beading or for center beading, cannot be surpassed. By adjustment of the fence center beading can be done up to five inches from the edge of a board. Except for working across the grain the spurs need not be used.

**Patent Tonguing and Grooving Plane.**

Including tonguing and grooving tools.

No. 48, iron stock and fence, for  $\frac{3}{4}$  to 1 $\frac{1}{4}$  inch boards .....each, \$2.50

No. 49, iron stock and fence, for  $\frac{3}{8}$  to  $\frac{3}{4}$  inch boards .....each, 2.50



## BENCH PLANES.

SMOOTH PLANE.

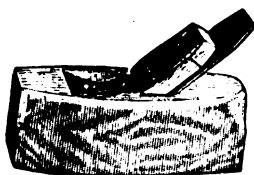


Fig. 1803.

JACK PLANE.

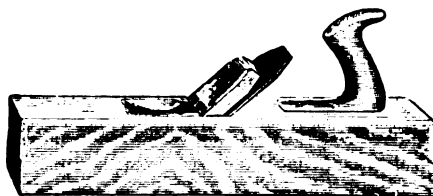


Fig. 1804.

FORE OR JOINTER PLANE.

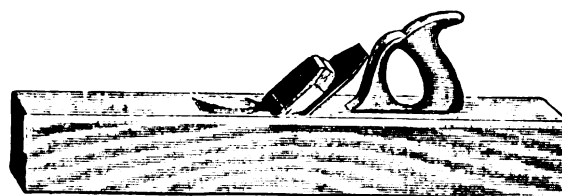


Fig. 1805.

## COMMON PLANES. NOT WARRANTED.

Single Irons.		Double Irons.	
No. 100, Smooth .....	each, \$0.60	No. 108, Smooth .....	each, \$0.90
" 101, Jack .....	" .75	" 109, Jack .....	" 1.00
" 102, Fore .....	" 1.00	" 110, Fore .....	" 1.40
" 103, Jointer, 26 inches .....	" 1.10	" 111, Jointer, 26 inches .....	" 1.50
		" 111, Jointer, 28 " .....	" 1.60

## EXTRA BENCH PLANES.

## BEST CAST STEEL IRONS.

Single Irons.		Double Irons.	
No. 104, Smooth .....	1 $\frac{3}{4}$ to 2 $\frac{1}{4}$ in. irons .....	No. 112, Smooth .....	1 $\frac{3}{4}$ to 2 $\frac{1}{4}$ in. irons .....
" 105, Jack .....	2 to 2 $\frac{1}{4}$ " " .....	" 112 $\frac{1}{2}$ , " Solid Hdl .....	2 to 2 $\frac{1}{4}$ " " .....
" 105 $\frac{1}{2}$ , Jack, Razee Hdl .....	2 to 2 $\frac{1}{4}$ " " .....	" 113, Jack .....	2 to 2 $\frac{1}{4}$ " " .....
" 106, Fore, 18 to 22 ins. ....	2 $\frac{3}{8}$ " " .....	" 113 $\frac{1}{2}$ , " Razee Hdl .....	2 to 2 $\frac{1}{4}$ " " .....
" 106 $\frac{1}{2}$ , Fore, Razee Hdl., 18 to 22 ins. ....	2 $\frac{1}{2}$ " " .....	" 114, Fore, 18 to 22 ins. ....	2 $\frac{3}{8}$ " " .....
" 107, Jointer, 24 to 26 ins. ....	2 $\frac{1}{2}$ " " .....	" 114 $\frac{1}{2}$ , " Razee Hdl., 18 to 22 ins. ....	2 $\frac{3}{8}$ " " .....
" 107 $\frac{1}{2}$ , Jointer, Razee Hdl., 24 to 26 ins. ....	2 $\frac{1}{2}$ " " .....	" 115, Jointer, 24 to 26 ins. ....	2 $\frac{1}{2}$ " " .....
		" 115, " 28 " .....	2 $\frac{5}{8}$ " " .....
		" 115, " 30 " .....	2 $\frac{3}{4}$ " " .....
		" 115 $\frac{1}{2}$ , " Razee Hdl., 24 to 26 ins. ....	2 $\frac{1}{2}$ " " .....

## PREMIUM BENCH PLANES.

## BOLTED HANDLE AND START.

Best Double Irons.		Polished Planes, Best Double Irons.	
No. 400, Smooth .....	each, \$1.10	No. 404, Smooth .....	each, \$1.35
" 401, Jack .....	" 1.35	" 405, Jack .....	" 1.75
" 402, Fore, 22 inches .....	" 1.85	" 406, Fore, 22 inches .....	" 2.35
" 403, Jointer, 28 inches .....	" 2.20	" 407, Jointer, 28 inches .....	" 2.80
		" 408, Smooth, Solid Hdl. ....	" 2.25

With Diamond Bolts and Starts add 15 cents list.

Single Iron Planes with English Irons, add to the above list .....	10 cents.
Double " " " " " " " " .....	25 "

## APPLE, BOXWOOD AND ROSEWOOD PLANES.

## Polished Planes, Best Double Irons.

No. 411, Smooth, Applewood .....	2 to 2 $\frac{1}{4}$ in. ....	each, \$1.50
" 411 $\frac{1}{2}$ , " " Solid Hdl .....	2 to 2 $\frac{1}{4}$ " .....	" 2.50
" 412, Jack, " Bolted " .....	2 to 2 $\frac{1}{4}$ " .....	" 1.75
" 413, Fore, " " to 22 in., ....	2 $\frac{1}{2}$ " .....	" 2.50
" 414, Jointer, " " to 26 in., ....	2 $\frac{1}{2}$ " .....	" 3.25
" 415, Smooth, Boxwood .....	2 to 2 $\frac{1}{4}$ " .....	" 2.50
" 415 $\frac{1}{2}$ , " " Small Extra .....	1 $\frac{3}{4}$ " .....	" 1.75
" 416, " " Solid Hdl .....	2 to 2 $\frac{1}{4}$ " .....	" 5.00
" 417, " Rosewood .....	2 to 2 $\frac{1}{4}$ " .....	" 2.00
" 417 $\frac{1}{2}$ , " " Small Extra .....	1 $\frac{3}{4}$ " .....	" 1.50
" 418, " " Solid Hdl .....	" .....	" 4.00
" 419, Mitre Boxwood, Single Iron .....	1 $\frac{1}{2}$ to 1 $\frac{3}{4}$ in. ....	" 1.75
" 420, " " Double " .....	1 $\frac{1}{2}$ to 1 $\frac{3}{4}$ " .....	" 2.00
" 421, " Rosewood, Single " .....	1 $\frac{1}{2}$ to 1 $\frac{3}{4}$ " .....	" 1.50
" 422, " " Double Iron .....	1 $\frac{1}{2}$ to 1 $\frac{3}{4}$ " .....	" 1.75

I can furnish any and all styles of special and fancy wood planes. In ordering send drawing or full description of plane wanted.

## SETS OF PLANES IN CASES.

Irons ground and tested ready for working neatly packed in wood cases. Sets of four consist of Double Iron Smooth, Jack, Fore 22 inches, Jointer 28 inches.

## Extra Planes.

No. 500, Set of four planes, with Iron Starts .....	per set, \$6.00
" 501, " " " Razee Handle ....	" 6.75

## Premium Planes.

No. 502, Set of four planes, Bolted Hdl. and Starts .....	\$8.00
" 503, " " " Razee .....	8.75
" 504, " " " Polished .....	10.00
" 505, " " " Razee, Polished .....	10.75
Solid Handle Smooth in place of Double Smooth .....	extra, .90
" " with Set .....	" 1.75
Miter Plane Single, " .....	" .75

Ebony or boxwood starts in place of iron will be furnished if desired.

PLANES.

SINGLE BOXED BEAD.  
No. 123.

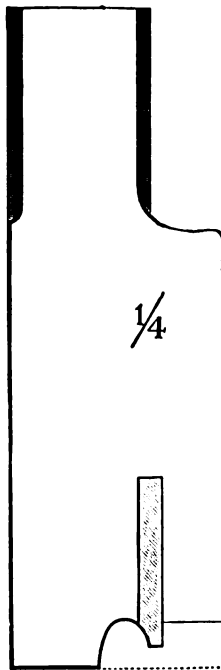


Fig. 1806.

DOUBLE BOXED BEAD.  
No. 124.

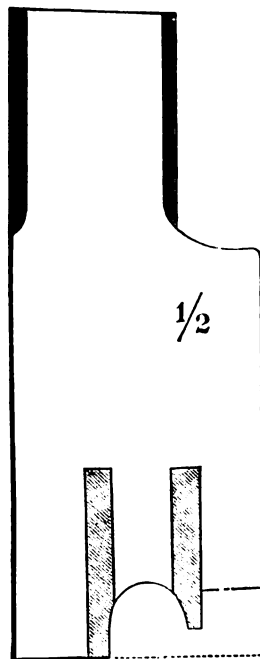


Fig. 1807.

CENTER BEAD.  
No. 126.

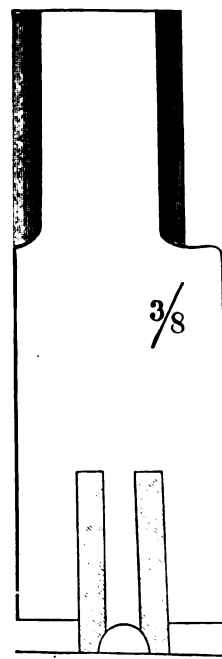


Fig. 1808.

REEDING PLANE.  
No. 131.

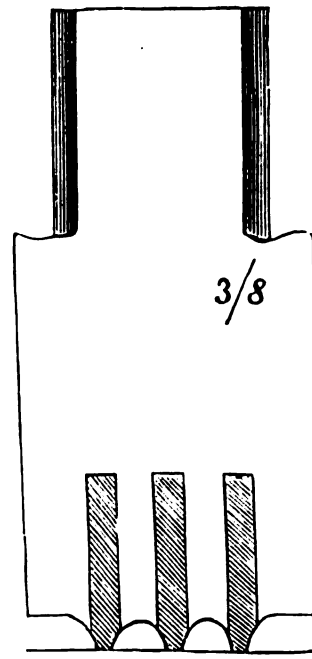


Fig. 1809.

No. 123, Single Boxed Beads.

Sizes, inches.....	1/4	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3
Each .....	\$0.50	.55	.55	.70	.70	.90	1.00	1.00	1.90			

No. 124, Double Boxed Beads.

Sizes, inches.....	1/4	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3
Each .....	\$0.60	.65	.65	.80	.80	1.00	1.00	1.00	1.00			

No. 126, Double Boxed Center Beads.

Sizes, inches.....	1/4	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3
Each .....	\$0.65	.65	.65	.65	.65	.65	.65	.65	.75	.75		

No. 131, Reeding Planes.

Sizes, inches.....	1/4	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3
Each .....	\$1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		

NOSING OR STEP PLANE.  
No. 133.



Fig. 1810.

DADO.  
No. 139.



Fig. 1811.

Nosing or Step Planes.

No. 132, WITH ONE IRON.

Sizes, inches.....	1/4	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3
Each .....	\$0.80	.80	.80	1.00	1.00	1.00	1.00	1.00	1.00			

No. 133, WITH TWO IRONS.

Sizes, inches.....	1/4	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3
Each .....	\$1.10	1.10	1.10	1.20	1.20	1.20	1.20	1.20	1.20			

**Dadoes.**

**No. 136, PLAIN DADOES.**

Sizes, inches.....	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$2$	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$
Each .....	\$0.75	.75	.75	.75	.75	.75	.75	.75	.75	.75

**No. 139, DADO WITH SCREW STOP.**

Sizes, ins. $\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$2$	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$
Each .....	\$1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50

SQUARE RABBET PLANE.  
No. 155.



Fig. 1814.

SKEW RABBET PLANE.  
No. 157.

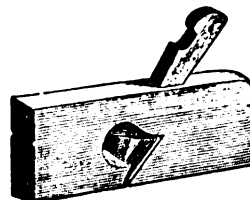


Fig. 1815.

HANDLED RABBET PLANE.  
No. 160.

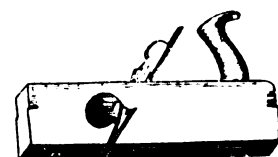


Fig. 1816.

No. 155, Square Rabbet Planes.

Sizes, inches.....	1/4	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3
Each .....	\$0.60	.60	.60	.60	.60	.65	.65	.65	.65	.90	1.00	1.00

No. 157, Skew Rabbet Planes.

Sizes, inches.....	1/4	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3
Each .....	\$0.60	.65	.65	.70	.70	.80	.80	.90	.90	1.00	1.00	1.00

No. 160, Handled Rabbet Plane, 16 inches, handle on top, one cut, all sizes to 2 1/2 inches.....each, \$1.50

FILLETSTER.  
No. 148.

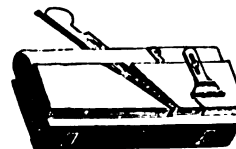


Fig. 1812.

FILLETSTER.  
No. 150.

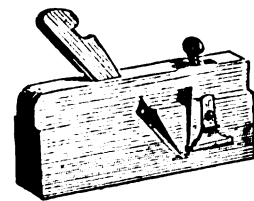


Fig. 1813.

Filletsters.

No. 146, Filletsters .....	each, \$1.10
" 147, " with stop .....	" 1.25
" 148, " " and cut .....	" 1.40
" 149, " " cut and dovetailed boxed .....	" 1.85
" 150, " with screw stop, cut and dovetailed boxed, " .....	2.50
" 151, " solid handle .....	" 3.75

PANEL PLANES.

No. 140, Panel Planes .....	each, \$1.15
-----------------------------	--------------

DOOR PLANES.

No. 144, Door Planes, oges or bevel, 1/2 to 5/8 inch.....	each, \$0.88
---	--------------

## MOULDING PLANES.

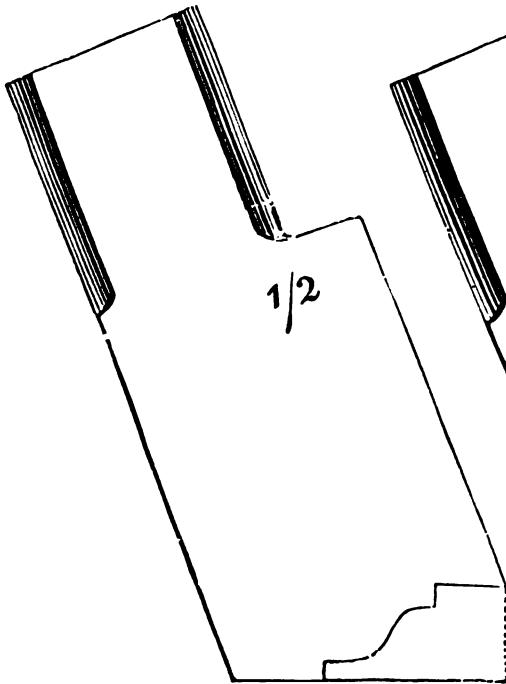
PLAIN OGEE.  
No. 204.

Fig. 1817.

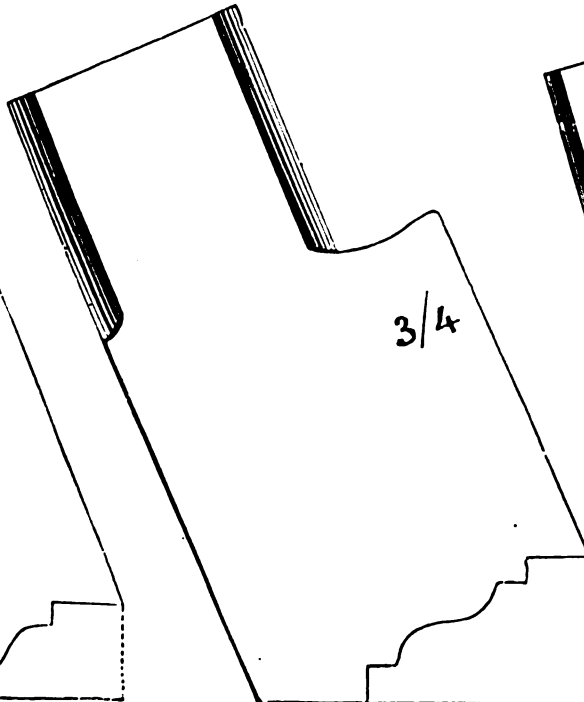
REVERSE AND BACK OGEE.  
No. 207.

Fig. 1818.

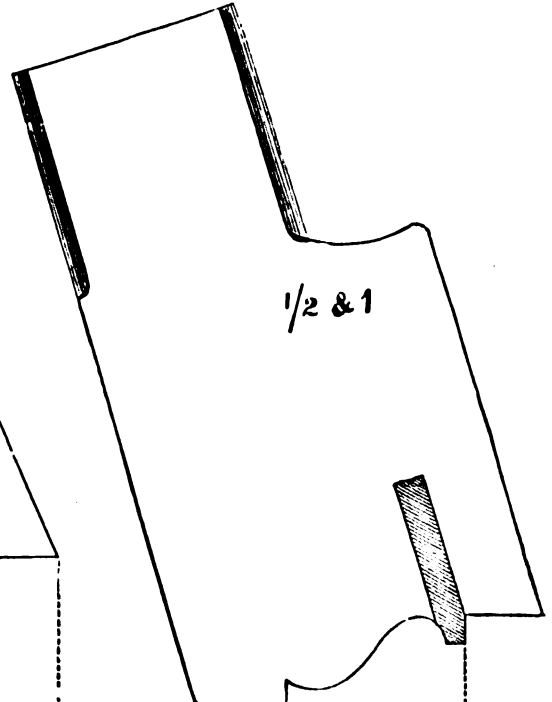
GRECIAN OGEE.  
No. 208.

Fig. 1819.

No. 204, Plain Ogees.

$\frac{3}{8}$ , $\frac{1}{2}$ , $\frac{5}{8}$ , $\frac{3}{4}$ , $\frac{7}{8}$ and 1 inch.....	each, \$0.65
$1\frac{1}{4}$ and $1\frac{1}{2}$ inches .....	" .85
$1\frac{3}{4}$ and 2 " .....	" 1.00

Sizes given are the width tool works.

No. 207, Reverse and Back Ogees.

With Bead or Square.

$\frac{3}{8}$ , $\frac{1}{2}$ , $\frac{5}{8}$ , $\frac{3}{4}$ , $\frac{7}{8}$ and 1 inch.....	each, \$0.85
$1\frac{1}{4}$ and $1\frac{1}{2}$ inches .....	" 1.10
$1\frac{3}{4}$ and 2 " .....	" 1.30

No. 208, Grecian Ogees.

$\frac{3}{8}$ , $\frac{1}{2}$ , $\frac{5}{8}$ , $\frac{3}{4}$ , $\frac{7}{8}$ and 1 inch.....	each, \$0.75
$1\frac{1}{4}$ and $1\frac{1}{2}$ inches .....	" 1.90
$1\frac{3}{4}$ and 2 " .....	" 1.10
With Handle, extra.....	per inch, .90

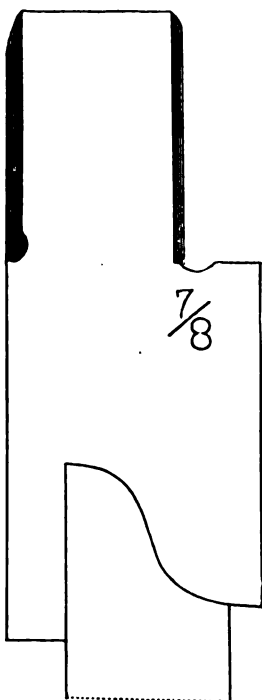
ROMAN REVERSE OGEE.  
No. 207 $\frac{1}{2}$ .

Fig. 1820.

No. 207 $\frac{1}{2}$ , Roman Reverse Ogees.

With Fence.

$\frac{3}{8}$ , $\frac{1}{2}$ , $\frac{5}{8}$ , $\frac{3}{4}$ , $\frac{7}{8}$ and 1 inch.....	each, \$0.90
$1\frac{1}{4}$ and $1\frac{1}{2}$ inches .....	" 1.00

Sash Planes and Sash Coping Planes, Ovolo, Bevel, Gothic and Ogee, Snipe Bills and Base Mouldings, Cornice, Cabinet and Halving Planes and any style of Fancy Planes furnished on receipt of pattern. Prices on application.

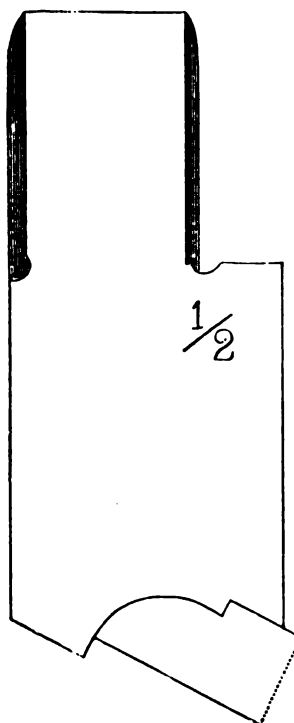
QUARTER ROUND OR OVOLO.  
No. 217 $\frac{1}{2}$ .

Fig. 1821.

No. 217 $\frac{1}{2}$ , Quarter Rounds or Case Moulding.

$\frac{3}{8}$ , $\frac{1}{2}$ , $\frac{5}{8}$ and $\frac{3}{4}$ inch.....	each, \$0.75
$\frac{7}{8}$ and 1 inch.....	" .85
$1\frac{1}{4}$ and $1\frac{1}{2}$ inches.....	" .95

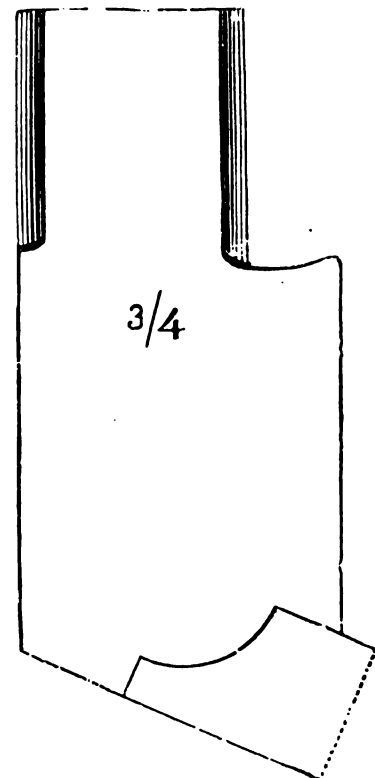
SCOTIA OR COVE.  
No. 219.

Fig. 1822.

No. 219, Scotias or Coves.

$\frac{3}{8}$ , $\frac{1}{2}$ , $\frac{5}{8}$ and $\frac{3}{4}$ inch.....	each, \$0.50
$\frac{7}{8}$ and 1 inch.....	" .65
$1\frac{1}{4}$ and $1\frac{1}{2}$ inches.....	" .75

## PLANES, PLANE IRONS AND MARKING GAUGES.

## MATCH PLANES.

No. 174.

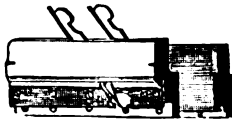


Fig. 1823.

## Match Planes.

No. 173, not plated, to 1 $\frac{1}{4}$  ins....per pair, \$1.25  
 " 174, plated " 1 $\frac{1}{4}$  " .... " 1.50

## HOLLOWS AND ROUNDS.

One Set, No. 164.

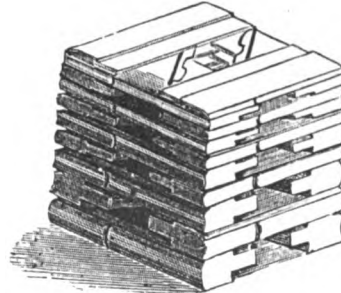


Fig. 1824.

## MATCH PLANES.

No. 175.



Fig. 1825.

## Match Planes, with Handles.

No. 175, not plated, to 1 $\frac{1}{4}$  ins....per pair, \$2.00  
 " 176, plated, " 1 $\frac{1}{4}$  " .... " 2.25

## Prices, Hollows and Rounds.

No. 164, set of 10 pairs, Nos. 2 to 20, even numbers.....per set, \$8.30  
 " 167, in pairs, Nos. 2, 4, 6, 8, 10 & 12.....per pair, .75  
 " 167, " " 14, 16 & 18....." .90  
 " 167, " " 20, 22 & 24....." 1.10

## Sizes of Hollows and Rounds.

Nos.	2	4	6	8	10	12	14	16	18	20	22	24
Sizes, ins.	1 $\frac{1}{4}$	3 $\frac{3}{8}$	1 $\frac{1}{2}$	5 $\frac{5}{8}$	3 $\frac{1}{2}$	7 $\frac{7}{8}$	1	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2
Workcircle, ins.	1 $\frac{1}{4}$	1 $\frac{1}{2}$	3 $\frac{1}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$

## GROOVING PLOW.

No. 232.

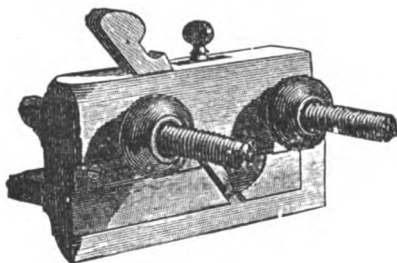


Fig. 1826.

## Applewood Screw Arms, Single Plate.

No.	232, with screw stop,	233, " " boxed or plated fence,	234, " " solid handle,	235, " " boxed or plated fence,	8 irons..each,	Price
No. 232, with screw stop,					8 irons..each,	\$4.50
" 233, " " boxed or plated fence,					8 " .. " "	4.85
" 234, " " solid handle,					8 " .. " "	5.50
" 235, " " boxed or plated fence,					8 " .. " "	5.80

## GROOVING PLOW.

No. 234.

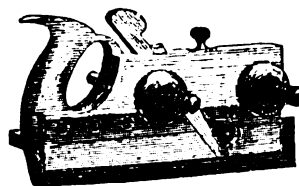


Fig. 1827.

## GROOVING PLOW.

No. 238.

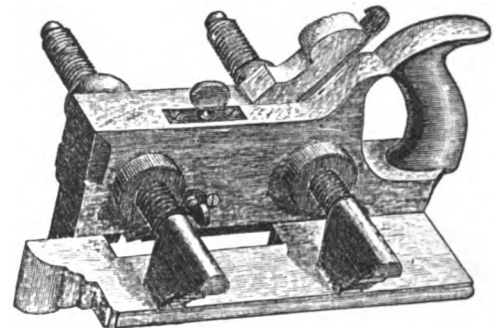


Fig. 1828.

## Boxwood Screw Arms and Screw Stop, with Side Stop.

No.	236, beech, handled, single plate,	237, " " boxed fence,	238, " " best plate,	240, solid boxwood, handled, best plate, polished,	8 irons ..each,	Price
No. 236, beech, handled, single plate,					8 irons ..each,	\$6.00
" 237, " " boxed fence,					8 " .... " "	6.50
" 238, " " best plate,					8 " .... " "	7.00
" 240, solid boxwood, handled, best plate, polished,					8 " .... " "	10.00

## PLANE IRONS.

Cut Iron.

Single Iron.



Fig. 1829.

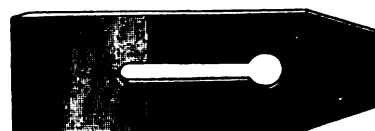


Fig. 1830.

Double Iron.

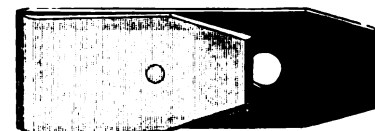


Fig. 1831.

## Prices Single and Cut Plane Irons.

Width, inches	1 $\frac{1}{2}$	1 $\frac{5}{8}$	1 $\frac{3}{4}$	1 $\frac{7}{8}$	2	2 $\frac{1}{8}$
Per dozen	\$1.75	1.75	1.75	1.88	2.00	2.13
Width, inches	2 $\frac{1}{4}$	2 $\frac{3}{8}$	2 $\frac{1}{2}$	2 $\frac{5}{8}$	2 $\frac{3}{4}$	3
Per dozen	\$2.38	2.63	2.88	3.13	3.50	4.50

## Prices Double Plane Irons.

Width, inches	1 $\frac{1}{2}$	1 $\frac{5}{8}$	1 $\frac{3}{4}$	1 $\frac{7}{8}$	2	2 $\frac{1}{8}$
Per dozen	\$3.75	3.75	4.00	4.00	4.13	4.25
Width, inches	2 $\frac{1}{4}$	2 $\frac{3}{8}$	2 $\frac{1}{2}$	2 $\frac{5}{8}$	2 $\frac{3}{4}$	3
Per dozen	\$4.50	4.75	5.25	5.50	6.50	7.50

## MARKING GAUGES.

Premium Gauge.

No. 248.

Common Gauge.

No. 247.



Fig. 1832.

## Common and Premium Gauges.

Gauge Bars Marked in Inches.

No.	Description	per dozen	Price
No. 246, Common Gauge, square bar		per dozen,	\$0.90
" 247, " " oval		"	1.00
" 248, oval head and bar, steel points		"	1.25
" 249, applewood, oval head and bar, steel points		"	2.00
" 250, mahogany or applewood, plated oval head and bar, steel points		"	4.00

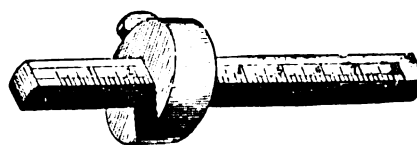


Fig. 1833.

Mortise Gauge.

No. 262.

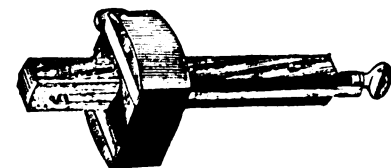


Fig. 1834.

## Mortise Gauges.

With Brass Thumb Screws and Steel Points.

No.	Description	per dozen	Price
No. 259, mahogany or applewood, plated head, thumb slide		per dozen,	\$6.50
" 261, box or rosewood, plated head, screw slide		"	11.00
" 262, " " plated head and bar, screw slide		"	14.00

## Slitting Gauges.

No.	Description	per dozen	Price
No. 265, with handle		per dozen,	\$9.00
" 266, " and rollers		"	10.00

## A high-contrast, black and white photograph of a wooden beam. The beam is oriented horizontally and shows a prominent circular hole on the left side. A metal fastener, possibly a bolt or a bracket, is visible on the top surface of the beam towards the right. The wood grain is clearly visible, and the image has a grainy, textured appearance.

### Prices, Plain Levels.

No. 286, Cherry, side views, assorted, 10 to 16 inches.....per doz., \$9.00	No. 287, Cherry, side views, assorted, 18 to 24 inches.....per doz., \$12.00
<b>Prices, Plumbs and Levels.</b>	
No. 289 <sup>1</sup> / <sub>2</sub> , Cherry, polished, side views, 12 to 18 inches.....per doz., \$14.00	No. 293 <sup>1</sup> / <sub>2</sub> , Cherry, polished, side views and tipped, 24 to 30 ins.per doz.\$28.00
" 289 <sup>1</sup> / <sub>2</sub> , " " " 18 to 24 " ..... " 16.00	" 294, " " triple stock, brass lipped, side views and tipped, 24 to 30 inches..... " 45.00
" 290, " " " 24 to 30 " ..... " 18.00	" 296, Mahogany, polished, brass lipped, side views and tipped, 12 to 18 inches..... " 27.00
" 290 <sup>1</sup> / <sub>2</sub> , " " brass lipped, side views, 24 to 30 ins. " 24.00	" 297, Mahogany, polished, brass lipped, side views and tipped, 24 to 30 inches..... " 48.00
" 293, " " " " and tipped, 24 to 30 inches..... " 35.00	
<b>Prices, Masons' Plumbs and Levels.</b>	
No. 310, Cherry, polished, side views, 36 inches.....per doz., \$21.00	No. 310 <sup>1</sup> / <sub>4</sub> , Two Plumbs, cherry, polished, side views, 36 ins..per doz., \$25.00

## A long, narrow, rectangular object, possibly a piece of wood or metal, with a circular hole near the left end and a small metal fastener near the right end. The object is heavily textured and appears to be a cross-section of a larger structure.

### Prices, Patent Adjustable Plumbs and Levels.

Prices, Patent Adjustable Plumbs and Levels.					
No. 490 <sup>1</sup> / <sub>2</sub> , Cherry, polished, brass lipped, side views, 2 <sup>1</sup> / <sub>4</sub> to 30 inches.....	per doz.,	\$27 00	No. 494, Cherry, polished, triple stock, brass lipped, side views and tipped, 2 <sup>1</sup> / <sub>4</sub> to 30 inches.....	per doz.,	\$48.00
" 493, Cherry, polished, brass lipped, side views and tipped, 2 <sup>1</sup> / <sub>4</sub> to 30 inches.....	"	39 00	" 497, Mahogany, polished, brass lipped, side views and tipped, 2 <sup>1</sup> / <sub>4</sub> to 30 inches.....	"	48.00
" 493 <sup>1</sup> / <sub>2</sub> , Cherry, polished, side views and tipped, 2 <sup>1</sup> / <sub>4</sub> to 30 inches.....	"	30.00			

### Prices, Masons' Adjustable Plumbs and Levels.

<p>No. 410<sup>1</sup>/<sub>4</sub>, Cherry, polished, two plumbs, side views, 36 ins..per doz., \$30.00</p>		<p>No. 490<sup>3</sup>/<sub>4</sub>, Cherry, polished, brass lipped, side views, 42 ins..per doz., \$33.00</p>	
<p>No. 311, all iron pocket level.....per doz., \$2.50</p>		<p>No. 312, iron pocket level, with brass top.....per doz., \$3.00</p>	

### POCKET LEVELS.

### LEVEL GLASSES.

LEVEL GLASSES.							
Sizes, inches.....	1 $\frac{3}{4}$	2	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$
Per gross.....	\$9.50	10.00	10.50	11.50	13.00	14.50	16.00
							Assorted, 1 $\frac{3}{4}$ , 3 and 3 $\frac{1}{2}$
							12.00

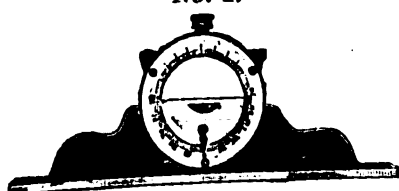
## ADJUSTABLE IRON DOUBLE PLUMBS AND LEVELS.

**Fig. 1838.**

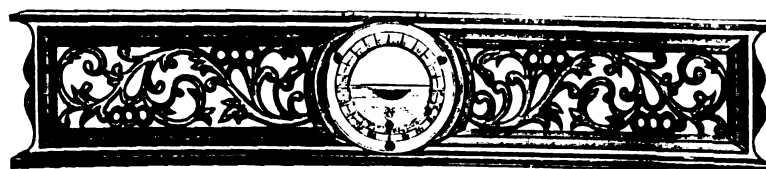
These Plumbs and Levels are practically arranged for the use of carpenters as well as machinists.

No. 6, 6 inches.....per doz., \$24.00    No. 7, 12 inches....per doz., \$27.00    No. 8, 18 inches....per doz., \$30.00    No. 9, 24 inches....per doz., \$36.00

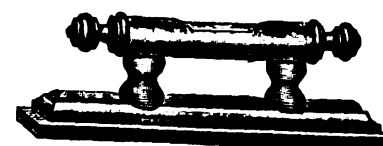
### Inclinometer. No. 1.



**Fig. 1839.**



**Fig. 1840.**



**Bench Level.**  
**No. 10.**

**Fig. 1841.**

### Prices, Machinists' Iron Levels, Figs. 1839 and 1840.

These Levels are fully warranted, and unequalled for accuracy, durability and simplicity.

No. 1, 6 inches..... per doz., \$24.00    No. 2, 12 inches.... per doz., \$30.00    No. 3, 18 inches.... per doz., \$36.00    No. 4, 24 inches.... per doz., \$42.00

### Prices, Machinists' Adjustable Iron Bench Levels.

No. 10, Iron Bench Level, 3 inches long.....		per doz., \$6.00	No. 11, Iron Bench Level, mounted on slotted base, with thumb screws,
" 12, " " 5 " .....	" " .....	9.00	for square or straight edge, 3 inches.....
			per doz., \$8.00



# SQUARES AND T BEVELS.

TRY SQUARE.

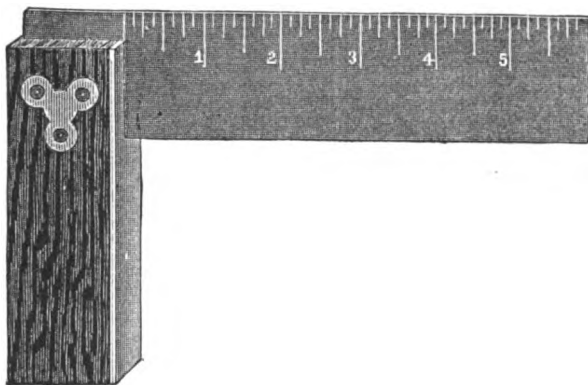


Fig. 1842.

SLIDING T BEVEL.

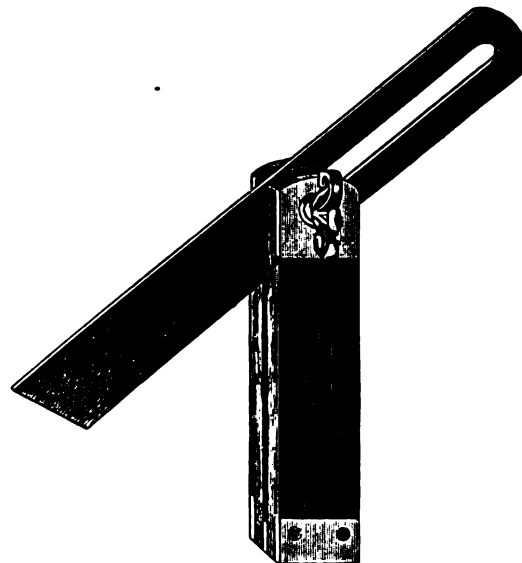


Fig. 1543.

## No. 2 Rosewood Handle Try Squares.

Sizes, inches,	3	4 1/2	6	7 1/2	9	10	12	15	18
Per doz.....	\$3.00	3.75	5.00	5.75	6.50	7.50	8.50	12.50	15.50

## Patent Improved Iron Handle Try Squares, Graduated Blade, Square Inside and Out.

Sizes, inches.....	4	6	8	10	12
Per dozen.....	\$2.75	3.50	4.50	5.50	7.00

## No. 2, Rosewood Handle, Brass Thumb Screw and Tips.

Size, inches.....	6	8	10	12	14
Per dozen.....	\$5.50	6.00	6.50	7.00	7.50

# STEEL AND IRON SQUARES.

Steel Square No. 3.

Bridge Square No. 15.

POLISHED.			NICKEL PLATED.		
Nos.	Per doz.	Width.	Width.	Per doz.	Nos.
100	\$66.00	2 ins.	2 ins.	\$74.00	200
1	48.00	2 "	2 "	56.00	101
2	44.00	2 "	2 "	52.00	102
2 1/2	40.00	2 "	2 "	48.00	102 1/2
3	35.00	2 "	2 "	42.00	103
4	33.50	2 "	2 "	40.50	104
5	32.50	2 "	2 "	39.50	105
6	31.00	2 "	2 "	38.00	106
7	30.00	2 "	2 "	37.00	107
8	27.00	1 1/2 "	1 1/2 "	33.00	108
9	25.50	1 1/2 "	1 1/2 "	31.50	109
15	180.00	3 "	3 "	200.00	115
16	75.00	2 "	2 "	85.00	116
13	27.00	2 "	2 "	34.00	113
14	25.50	2 "	2 "	32.50	114

POLISHED.			NICKEL PLATED.		
Nos.	Per doz.	Width.	Width.	Per doz.	Nos.
10	\$22.50	1 1/2 ins. wide.	1 1/2 ins. wide.	\$27.50	No. 110
11	21.00	1 1/2 "	1 1/2 "	26.00	" 111
12	30.00	1 1/2 "	1 1/2 "	35.00	" 112

POLISHED.			NICKEL PLATED.		
Nos.	Per doz.	Width.	Width.	Per doz.	Nos.
40	\$14.50	1 in. wide.	1 in. wide.	\$17.00	No. 140
41	11.50	1 "	1 "	13.50	" 141

POLISHED.			NICKEL PLATED.		
Nos.	Per doz.	Width.	Width.	Per doz.	Nos.
31	1 1/2 inches wide.	Marked in 1/4ths on one side	1 1/2 inches wide.	\$12.00	
32	1 1/2 "	" " 1/4ths " both sides	" "	15.00	
34	2 "	" " 1/4ths " " "	" "	22.00	

POLISHED.			NICKEL PLATED.		
Nos.	Per doz.	Width.	Width.	Per doz.	Nos.
21	1 1/2 inches wide.	Marked in 1/4ths on one side	1 1/2 inches wide.	\$8.00	
22	1 1/2 "	" " 1/4ths " both sides	" "	10.00	
24	2 "	" " 1/4ths " " "	" "	14.00	

Fig. 1844.

Fig. 1845.

# BOXWOOD RULES.

ONE FOOT FOUR FOLD RULE, No. 9.

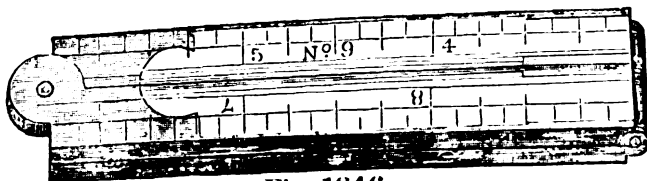


Fig. 1846.

Nos.				Per Doz.
1,	Round Joint, middle plates, 8ths and 16ths, $\frac{5}{8}$ inch wide.			\$3.00
2,	Square " " " " " " " "			3.50
3,	Arch " " " " " " " "			4.00
4,	" " edge plates, " " " " " "			6.00
5,	" " half bound, " " " " " "			10.00
6,	" " bound, " " " " " "			12.00

SIX INCH ONE FOLD CALLIPER RULE, No. 70.

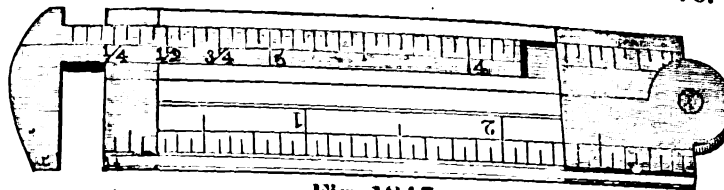


Fig. 1847.

Nos.				Per Doz.
70,	Square Joint, two fold, 6 ins., 8ths and 16ths, $\frac{7}{8}$ in. wide.			\$7.00
71,	" " " " " " " "			12.00
72,	" " " " " " " "			8.00
73,	Arch Joint, edge plates, four fold, 12 " " " "			12.00
74,	" " bound, " " " " " "			20.00

TWO FOOT FOUR FOLD RULE, DOUBLE ARCH JOINT, FULL BOUND, No. 21.

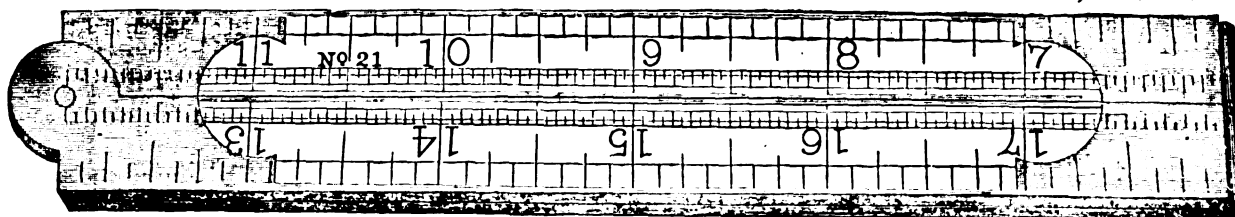


Fig. 1848.

Nos.	Two Feet, Four Fold, Narrow and Extra Narrow.		Per Doz.
10,	Round Joint, middle plates, 8ths and 16ths	1 in. wide,	\$1.00
11,	Square " " " " " " " "	1 " "	5.00
12,	16ths, extra narrow	$\frac{3}{4}$ " "	5.50
13,	Square Joint, edge plates, 8ths, 16ths, 10ths and scales	1 " "	7.00
14,	Square Joint, edge plates, extra quality, 8ths, 16ths, 10ths and scales, extra narrow	$\frac{3}{4}$ " "	8.00
15,	Square Joint, half bound, 8ths, 16ths, 10ths and scales	1 " "	12.00
16,	Square Joint, bound, 8ths, 16ths, 10ths and scales	1 " "	15.00
17,	Arch Joint, middle plates, 8ths, 16ths, 10ths and scales	$\frac{3}{4}$ " "	15.00
18,	Arch Joint, edge plates, 8ths, 16ths, 10ths and scales	1 " "	6.00
19,	Arch Joint, edge plates, 8ths, 10ths, 12ths and 16ths, with inside edges beveled, with drafting scale for architects' use	1 " "	8.00
20,	Arch Joint, half bound, 8ths, 16ths, 10ths and scales	1 " "	15.00
21,	Arch Joint, bound, 8ths, 16ths, 10ths and scales	1 " "	13.00
22,	Double Arch Joint, 8ths, 16ths, 10ths and scales	1 " "	16.00
23,	Double Arch Joint, bound, 8ths, 16ths, 10ths and scales	1 " "	9.00
24,	Double Arch Joint, bound, 8ths, 16ths, 10ths and scales	1 " "	21.00

Nos.	Two Feet, Four Fold, Broad.		Per Doz.
22,	Round Joint, middle plates, 8ths and 16ths	$\frac{13}{8}$ ins. wide,	\$5.00
23,	Sq. Joint, " " " " " " " "	$\frac{13}{8}$ " "	7.00
24,	" " edge plates, 8ths, 16ths, 10ths and scales,	$\frac{13}{8}$ " "	9.00
25,	Square Joint, half bound, 8ths, 16ths, 10ths and scales	$\frac{13}{8}$ " "	14.00
26,	Square Joint, bound, 8ths, 16ths, 10ths and scales	$\frac{13}{8}$ " "	18.00
27,	Arch Joint, middle plates, 8ths, 16ths, 10ths and scales	$\frac{13}{8}$ " "	9.00
28,	Arch Joint, edge plates, 8ths, 16ths, 10ths and scales	$\frac{13}{8}$ " "	11.00
29,	Arch Joint, half bound, 8ths, 16ths, 10ths and scales	$\frac{13}{8}$ " "	16.00
30,	Arch Joint, bound, 8ths, 16ths, 10ths and scales	$\frac{13}{8}$ " "	20.00
31,	Double Arch Joint, 8ths, 16ths, 10ths and scales	$\frac{13}{8}$ " "	12.00
32,	" " bound, 8ths, 16ths, 10ths and scales,	$\frac{13}{8}$ " "	24.00
33,	Arch Joint, edge plate, with slide, 8ths, 16ths, 10ths and scales	$\frac{13}{8}$ " "	14.00

Nos.	Two Feet, Four Fold, with Board Measure Table.		Per Doz.
34,	Square Joint, edge plates, 8ths, 16ths, 10ths and scales	$\frac{13}{8}$ ins. wide,	\$11.00
35,	Square Joint, bound, 8ths, 16ths, 10ths and scales	$\frac{13}{8}$ " "	20.00
36,	Arch Joint, edge plates, 8ths, 16ths, 10ths and scales	$\frac{13}{8}$ " "	13.00
37,	Arch Joint, bound, 8ths, 16ths, 10ths and scales	$\frac{13}{8}$ " "	22.00
38,	Sq. Joint, edge plates, with board stick table, 9 lines, 10 to 18 ft.		11.00

# IVORY RULES.

ONE FOOT FOUR FOLD RULE, No. 53.

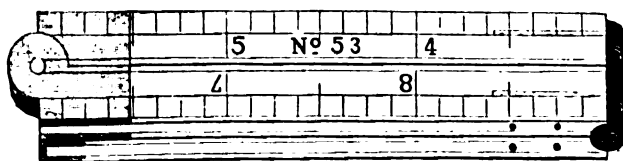


Fig. 1849.

Nos.	One Foot, Four Fold, with 8ths and 16ths.		Per Doz.
52,	Round Joint, middle plates, brass	$\frac{1}{2}$ in. wide,	\$10.00
53,	Square " " " " " " " "	$\frac{1}{2}$ " "	12.00
54,	" " " " " " " "	$\frac{1}{2}$ " "	14.00
55,	" " edge plates, " " " " " "	$\frac{5}{8}$ " "	17.00
56,	" " " " " " " "	$\frac{5}{8}$ " "	21.00
57,	Arch, " " " " " " " "	$\frac{1}{2}$ to $\frac{5}{8}$ " "	32.00
58,	Square " " " " " " " "	$\frac{1}{2}$ " "	28.00

Nos.	Two Feet, Four Feet Fold, with Full Scales.		Per Doz.
60,	Arch Joint, edge plates, German silver	1 in. wide,	\$64.00
61,	" " bound, " " " " " "	1 " "	80.00
62,	Double Arch Joint, bound, " " " " " "	1 " "	92.00
63,	Arch Joint, " " " " " " " "	$\frac{13}{8}$ " "	102.00

ONE FOOT FOUR FOLD CALLIPER RULE, No. 79.

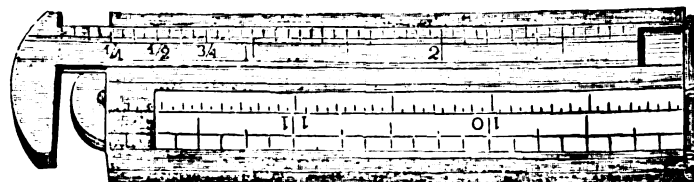


Fig. 1850.

Nos.	Six Inch Calliper Rules, with 8ths and 16ths.		Per Doz.
74,	Square Joint, two fold, German silver	$\frac{7}{8}$ in. wide,	\$15.00
75,	" " " " " " " "	$\frac{7}{8}$ " "	18.00
76,	" " " " " " " "	$\frac{7}{8}$ " "	18.00

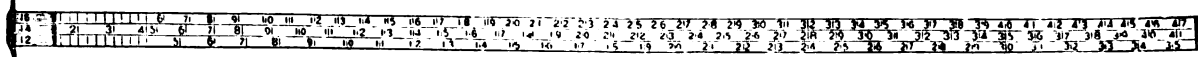
Nos.	Twelve Inch Calliper Rules, with 8ths and 16ths.		Per Doz.
77,	Square Joint, bound, four fold, German silver	$\frac{1}{2}$ to $\frac{5}{8}$ in. wide,	\$44.00
78,	Arch " " " " " " " "	$\frac{1}{2}$ " "	48.00
79,	" " " " " " " "	$\frac{7}{8}$ " "	60.00

Nos.	Two Feet, Four Fold Calliper Rules, with Full Scales.		Per Doz.
80,	Arch Joint, bound, German silver	$\frac{13}{8}$ ins. wide,	\$120.00

Boxwood and Ivory Rules graduated with Spanish or Metric measure without additional cost.

# MISCELLANEOUS RULES.

## BOARD STICK No. 901<sub>2</sub>.



### Board Measures.

**EXPLANATION OF BOARD STICKS.**—Know the length of boards you wish to measure. The figures on the end, eight and upwards, is the length in feet; place the stick on the flat surface to the outer edge of the board, follow the length column to the opposite edge, and the figure on the edge will be the contents in feet of 1 inch boards.

Nos.	Board Stick, octagon, 8 lines, 9 to 16 feet.....	24 inch, \$6.00
86,	“ square and octagon, 16 lines, 8 to 23 feet, 24 “	8.00
87,	“ “ 16 lines, 8 to 23 feet, 36 “	12.00
88,	“ walking cane, brass head and tip, 8 lines, 9 to 16 feet	12.00
89,	Board Stick, flat with T head, 10 lines, 9 to 19 feet....	9.00
90,	“ hickory, flat, with T head, 8 lines, 9 to 16 feet	12.00
90 <sub>1</sub> <sub>2</sub> ,	Board Stick, flat hickory, extra thin steel head, extra strong, 6 lines, 12 to 22 feet.....	26.00

### Yard Sticks.

82,	Yard Stick.....	\$1.50
83,	“ brass tipped, polished.....	3.50
97,	“ “ 5/8 inch square.....	4.00
98,	“ hickory, brass tipped, polished.....	4.50

Fig. 1851.

### Log Measures.

**EXPLANATION OF LOG STICKS.**—These sticks give the number of feet of 1 inch square edge boards sawed from a log from 12 to 36 inches in diameter. The figures 12 to 20, near the head, are for the length of logs in feet; follow the column under the length of the log to the diameter of the log, which will give the number of feet the log will make. Logs not over 15 feet long, the diameter should be taken at the small end; over 15 feet in length, at the middle.

Nos.	Log Stick, flat, with T head.....	36 inch, \$9.00
91,	“ hickory, flat, with T head.....	12.00
91 <sub>1</sub> <sub>2</sub> ,	“ walking cane, brass head and tip.....	12.00

### Wantage and Gauging Rods.

92,	Wantage Rod.....	\$5.00
93,	Gauging Rod.....	36 inch, 7.00
94,	“ “.....	48 “ 8.00
94 <sub>1</sub> <sub>2</sub> ,	“ with wantage table.....	48 “ 18.00

### Bench Rules and Wood Measures.

80,	Bench Rule, 24 inch.....	1 1/4 inches wide, \$3.00
81,	“ 24 inch, board measure table.....	1 1/2 “ 6.00
81 <sub>1</sub> <sub>2</sub> ,	Wood Measure, 48 inch, brass capped.....	8.00

### METALLIC TAPE.

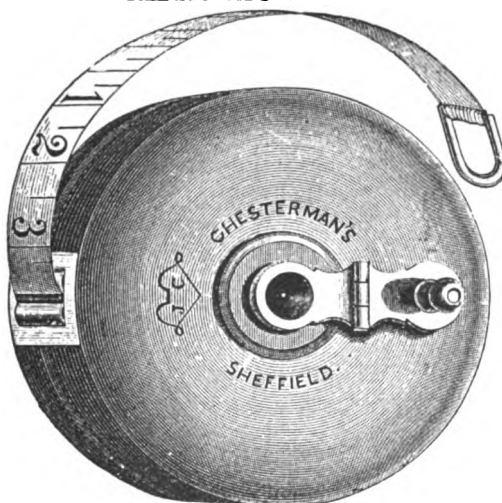


Fig. 1852.

### ASS SKIN CASE.

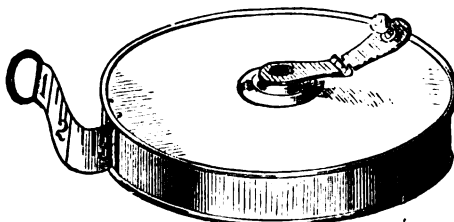


Fig. 1854.

### Ass Skin Case, Brass Bound.

Common cotton tape, 1/2 inch wide.										
Length, feet	25	30	40	50	60	75	80	100		
Per doz.....	\$3.75	4.00	4.50	5.00	6.00	7.50	8.00	9.00		
Holland tape, 1/2 inch wide.										
Length, ft.	25	30	40	50	60	75	80	100		
Per doz....	\$5.00	5.50	7.00	8.00	9.00	10.00	10.50	12.50		
Pocket Tapes, Spring, with Stop.										
Nickel plated case, 3/8 inch linen tape.										
Length, feet	3	5	6	7	8	12	15			
Per doz.....	\$9.00	10.00	11.00	11.50	12.00	15.00	18.00			

### Superior Steel Tapes.

Leather covered case, metal lined, flush handle, 3/8 inch steel tape.				
Length, foot.....	25	33	40	50
Each.....	\$5.00	5.50	7.00	8.00
Length, foot.....	66	75	100	
Each.....	\$10.00	12.00	15.00	

Graduated in 10ths or 12ths of a foot, or in metric measure when so ordered.

### MEASURING TAPES.

#### CHESTERMAN'S STEEL AND METALLIC.

##### Metallic or Wire Woven Tapes. Fig. 1852.

Length, feet.....	25	33	40	50	66	75	100
Each.....	\$1.80	2.10	2.30	2.60	3.00	3.30	4.20

##### Steel Tapes. Fig. 1853.

Leather Case, flush handle divided either in 10ths or 12ths.

Length, feet...	25	33	40	50	66	75	100
Each .....	\$1.50	5.20	6.00	7.20	9.20	10.40	12.80

##### Steel Pocket Tapes.

German Silver Case, with spring stop, divided in 16ths to the inch, or 16ths on one side and metres on the other.

Length, feet.....	3	4	6	8	12
Each.....	\$1.35	1.55	1.95	2.35	3.15

##### Metallic Tapes.

Lines only, without case.

Length, feet.....	33	40	50	66	75	100
Each.....	\$1.10	1.30	1.50	1.80	2.00	2.90

### STEEL TAPE.

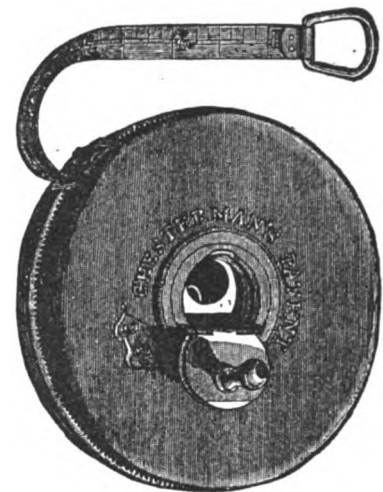


Fig. 1853.

### PATENT LEATHER CASE.



Fig. 1856.

### Common Patent Leather Case.

Best cotton tape, 1/2 inch wide.										
Length, ft.	25	30	40	50	60	66	75	80	100	
Per doz. ....	\$4.75	5.00	5.75	6.25	6.75	7.25	8.75	9.25	10.75	

### Fine Patent Leather Case, Stitched.

Super corded linen tape, 1/2 inch wide.										
Length, feet... 33	40	50	66	75	100					
Per doz.....	\$7.00	8.25	10.00	12.00	13.00	15.00				

### Steel Pocket Tapes, Spring, with Stop.

Nickel plated case, 1/4 inch steel tape.										
Length, ft.	3	4	5	6	8	12	15			
Per doz....	\$16.00	18.00	20.00	22.00	25.00	36.00	42.00			

### PAINE'S STANDARD STEEL TAPES.

#### Japanned Case Tape.

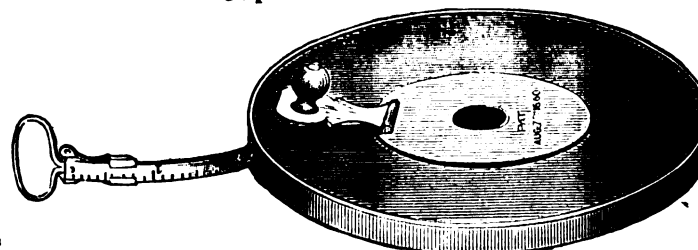


Fig. 1857.

### Paine's Steel Tapes.

#### Fig. 1857.

##### Japanned case.

Length, feet....	5	10	15	20	25
Each.....	\$1.50	2.00	2.50	3.00	3.50
Length, feet....	33	50	66	75	100
Each.....	\$4.50	6.00	8.00	10.00	12.00

##### Leather covered case, flush handle.

Length, feet...	33	50	66	75	100
Each.....	\$5.50	8.00	10.00	12.00	15.00



## CUTTING NIPPERS AND CARPENTERS' PINCERS.

### CAREW'S PATENT CUTTING NIPPERS.

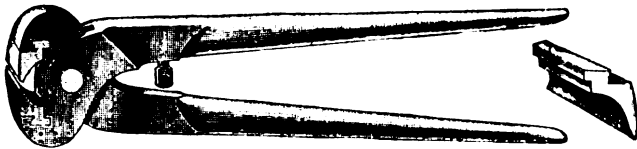


Fig. 1866.

Made throughout of forged steel with adjustable jaws of best tool steel.

Sizes, inches	6	8	10	12	14
Each	\$1.75	2.00	2.25	2.60	3.00

#### Extra Jaws.

For Nippers, sizes, inches	6	8	10	12	14
Per pair	\$0.55	.60	.65	.70	.75

### EXTRA QUALITY CARPENTERS' PINCERS.

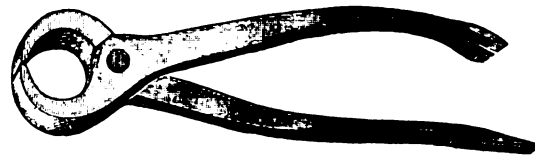


Fig. 1867.

#### Wrought Iron. Polished Face.

Sizes, inches	6	7	8	9	10
Per dozen	\$5.00	5.50	6.00	6.50	7.50

#### Extra Quality. Steel Face.

Sizes, inches	6	8	10	12
Per dozen	\$6.50	7.00	8.00	9.00

## COMPASSES AND DIVIDERS.

### PLAIN COMPASS.



Fig. 1868.

### SPRING DIVIDER.

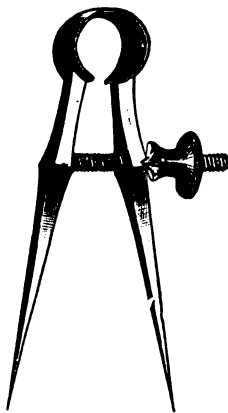


Fig. 1869.

### SPRING DIVIDER WITH THUMB ATTACHMENT.

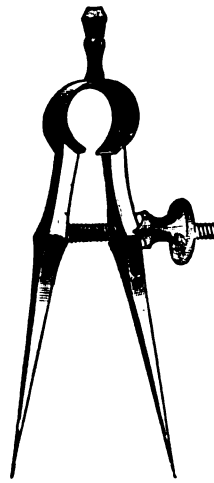


Fig. 1870.

### SPRING DIVIDER WITH COIL SPRING.

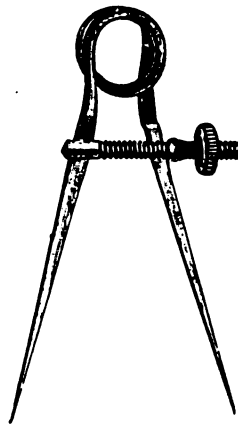


Fig. 1871.

### RELIABLE DIVIDER.



Fig. 1872.

### RELIABLE DIVIDER WITH THUMB ATTACHMENT.

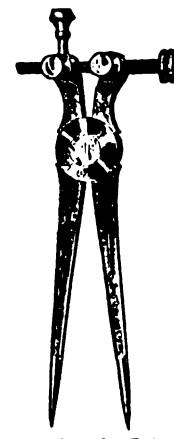


Fig. 1873.

### WING DIVIDER.

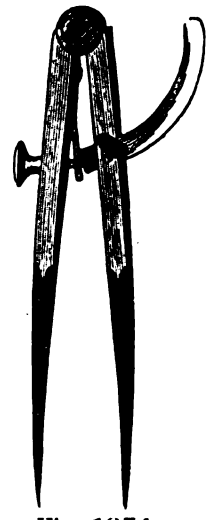


Fig. 1874.

#### Prices Plain Compasses, Fig. 1868.

Sizes, ins.	3	4	5	6	7	8	9	10	12
Per doz.	\$3.12	3.25	3.50	4.00	4.75	5.50	10.75	12.00	13.00

### IDEAL SPRING DIVIDER.

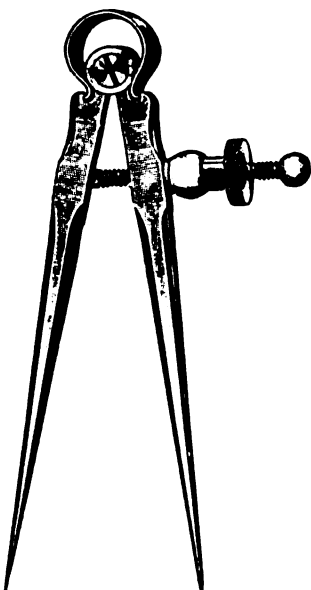


Fig. 1875.

#### Prices, Spring Dividers. Fig. 1869.

Sizes, ins.	2	3 1/2	4	5	6
Each	\$1.00	1.00	1.25	1.25	1.50

#### Prices, Spring Dividers. Fig. 1870.

Sizes, ins.	2	3 1/2	4	5	6
Each	\$1.15	1.15	1.40	1.50	1.75

#### Prices, Coil Spring Dividers. Fig. 1871.

3 1/2 ins.	each, \$0.50
------------	--------------

#### Prices, Reliable Dividers. Fig. 1872.

5 ins.	each, \$1.50
--------	--------------

#### Prices, Reliable Dividers. Fig. 1873.

5 ins.	each, \$1.75
--------	--------------

#### Prices, Wing Dividers. Fig. 1874.

Sizes, ins.	5	6	7	8	9	10	12	15	18
Per doz.	\$5.50	5.50	6.50	7.50	9.00	10.00	12.00	18.00	25.00

#### Prices, Ideal Spring Dividers.

##### Plain. Fig. 1875.

Sizes, ins.	3	4	5	6
Each	\$1.00	1.25	1.25	1.50

##### With Thumb Attachment.

Sizes, ins.	3	4	5	6
Each	\$1.15	1.40	1.50	1.75

The Ideal Spring Dividers have a spring nut and washer combined which allows of opening or closing the tool instantly without turning the nut.

#### Prices, Leader Spring Dividers.

##### Plain. Fig. 1876.

Sizes, ins.	2 1/2	3	4	5	6	8
Each	\$0.65	.70	.75	.80	.85	1.10

##### With Thumb Attachment.

Sizes, ins.	2 1/2	3	4	5	6	8
Each	\$0.80	.85	.90	.95	1.00	1.25

### LEADER SPRING DIVIDER.

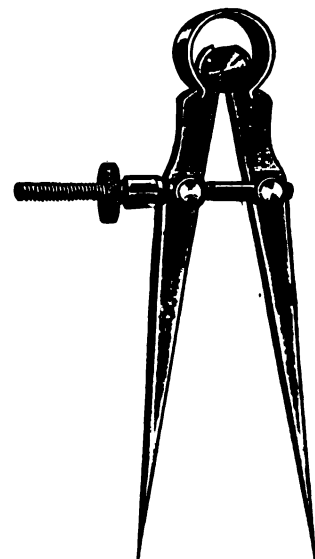


Fig. 1876.



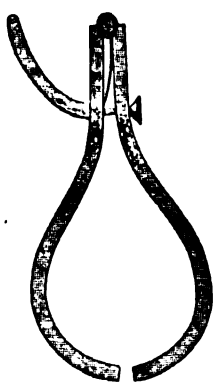
WING  
CALLIPER.

Fig. 1877.

INSIDE  
CALLIPER.

Fig. 1878.

OUTSIDE  
CALLIPER.

Fig. 1879.

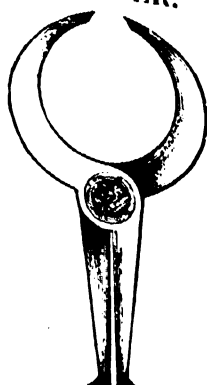
CALLIPERS.  
INSIDE & OUTSIDE  
CALLIPER.

Fig. 1880.

NAVY  
CALLIPER.

Fig. 1881.

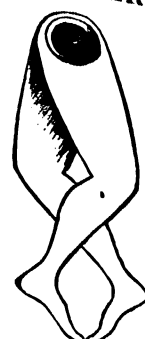
FANCY  
CALLIPER.

Fig. 1882.

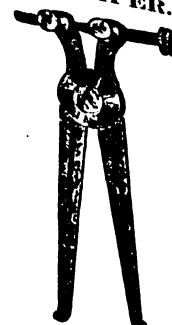
RELIABLE  
CALLIPER.

Fig. 1883.

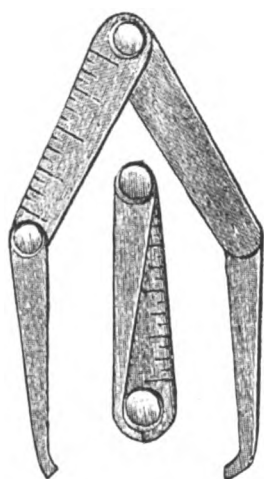
FOLDING  
CALLIPER.

Fig. 1884.

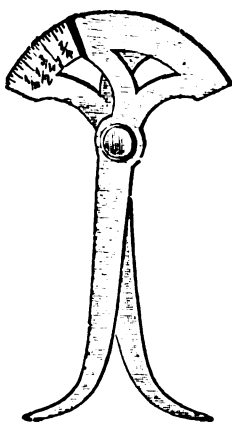
REGISTERING  
CALLIPER.

Fig. 1885.

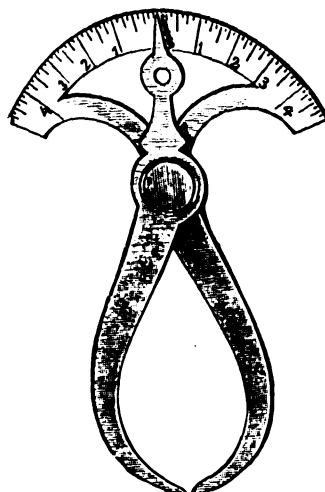
REGISTERING  
CALLIPER.

Fig. 1886.

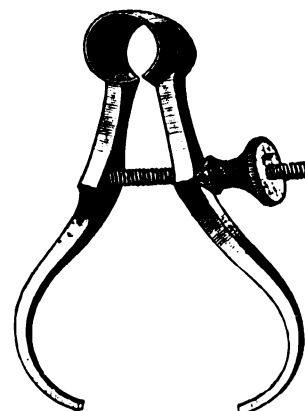
SPRING  
CALLIPER.

Fig. 1887.

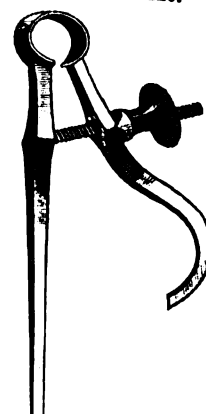
SPRING  
KEY HOLE  
CALLIPER.

Fig. 1888.

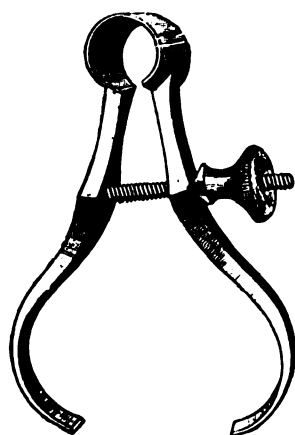
SPRING  
SCREW CALLIPER.

Fig. 1889.

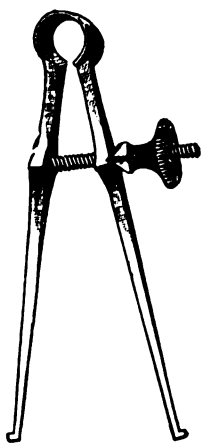
SPRING  
INSIDE CALLIPER.

Fig. 1890.

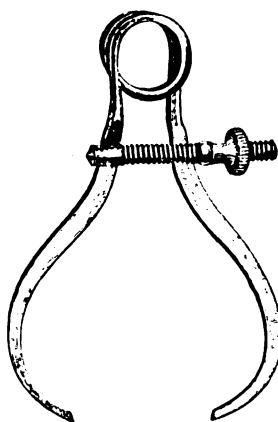
COIL SPRING  
CALLIPER.

Fig. 1891.

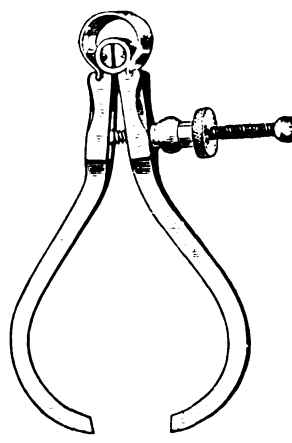
IDEAL  
SPRING CALLIPER.

Fig. 1892.

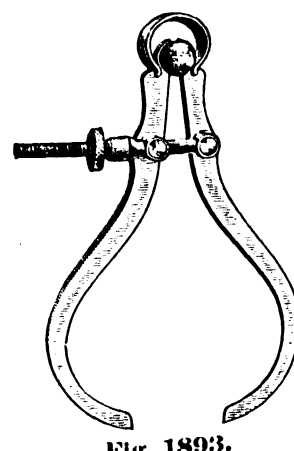
LEADER  
SPRING CALLIPER.

Fig. 1893.

Prices, Callipers, Figs. 1877 to 1893.

Sizes, inches.....	Fig. 1877.....	2	2½	3	3½	4	5	6	7	8	10	12
Wing Callipers.....	per doz.,							\$7.00				
Inside Callipers.....	" 1878.....		\$3.00	3.00		3.25	3.75	4.25	5.00	6.00	7.25	13.00
Outside Callipers.....	" 1879.....		3.00	3.00		3.25	3.75	4.25	5.00	6.00	7.25	
Inside and Outside Callipers combined.....	" 1880.....			3.50		4.25	5.00	6.00				
Navy Callipers.....	" 1881.....				3.50							
Fancy Leg Callipers.....	" 1882.....		3.50									
Reliable Callipers, with right and left hand screw,	" 1883.....						15.00					
Folding Callipers, with rule.....	" 1884.....							7.50				
Registering Callipers, measuring inside or outside,	" 1885.....			7.50								
Registering Callipers,	" 1886.....			7.50		9.00	11.00	13.00				
Spring Callipers.....	" 1887.....	\$12.00	12.00	12.00		15.00	15.00	18.00				
Spring Key Hole Callipers.....	" 1888.....			13.80		18.00						
Spring Screw Callipers.....	" 1889.....			12.00			15.00					
Spring Inside Callipers.....	" 1890.....						15.00					
Spring Callipers, with helical coil spring.....	" 1891.....	4.80	4.80	4.80		6.00	6.00					
Ideal Spring Callipers.....	" 1892.....		12.00	12.00		15.00	15.00	18.00				
Leader Spring Callipers.....	" 1893.....		7.80	8.40		9.00	9.60	10.20		12.00		

# MACHINISTS' CALLIPERS AND GAUGES.

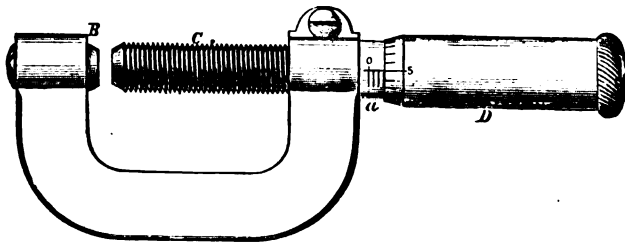


Fig. 1894.

Graduated to read thousandths of inches, but half and quarter thousandths may be readily obtained.  
Each.....\$1.50 In Morocco Case.....each, \$5.00

## Metric Micrometer Caliper.

For all sizes less than twenty-five millimeters diameter; although graduated to read to fiftieths of millimeters, hundredths are readily obtained.  
Each.....\$1.50 In Morocco Case.....each, \$5.00

## IMPROVED POCKET VERNIER CALLIPER.

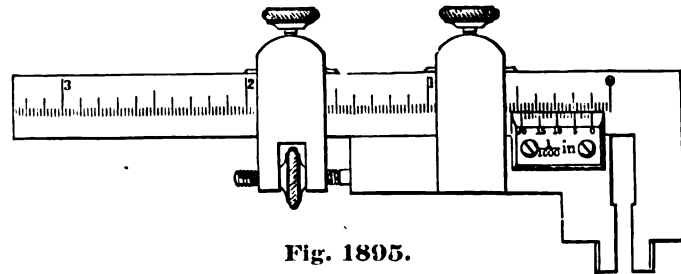


Fig. 1895.

These instruments can be furnished with millimeters (in the place of sixtieths of an inch), and provided with a Vernier to read to one-fiftieth of a millimeter.  
Each.....\$10.00 In Morocco Case.....each, \$10.50

The side represented above is graduated upon the bar to inches and fiftieths of an inch, and by aid of a Vernier is read to one-thousandths of an inch. The opposite side is graduated to inches, and sixtieths of an inch. This caliper will measure one inch and eleven-sixteenths outside diameter, when the jaws are opened full size.

## IMPROVED VERNIER CALLIPER.

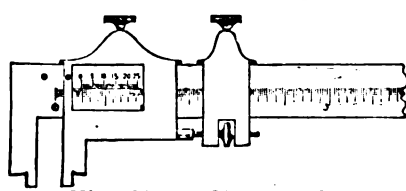


Fig. 1896, Front Side.

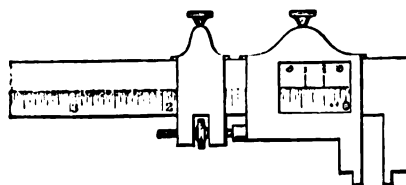


Fig. 1897, Back Side.

In place of 64ths on the back side these callipers can be divided to read with Vernier to 50ths of a millimeter. The jaws of the 6, 12 and 24 inch callipers are respectively 1 1/4 in. long, 3/4 in. wide (when closed); 7/8 in. and 3 1/4 in. long 3-10 in. wide; and 7/8 in. long, 3-10 in. wide; all are 3/4 in. thick. They can be used for either inside or outside callipers, and have points by which dividers can be set to transfer distances.

## Prices, in Morocco Cases.

6 in..each, \$15.00 12 in..ea. \$20.00 24 in..ea. \$25.00  
12 in., with long jaw.....each, \$25.00  
Standard for testing accuracy of the adjustment of calliper.....each, 3.00

## SURFACE GAUGE.

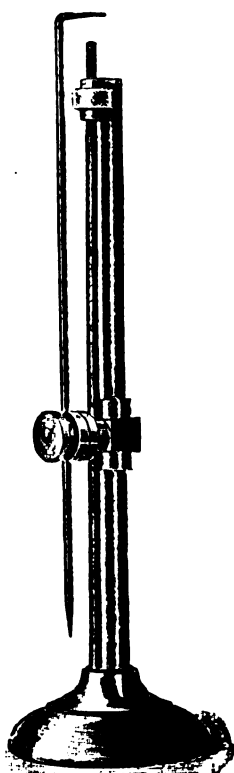


Fig. 1905.

## Description, Fig. 1902.

Fig. 1902 is a fac-simile of one side of the steel calliper rule; the other side is divided to 12ths, 24ths, 48ths, 8ths, 14ths and 28ths; on the outside and upon the slide to 32ds and 64ths of inches. When closed they are 3 inches long. The calliper can be drawn out to measure 2 1/2 inches. The thickness of the rule is 1/8 inch.

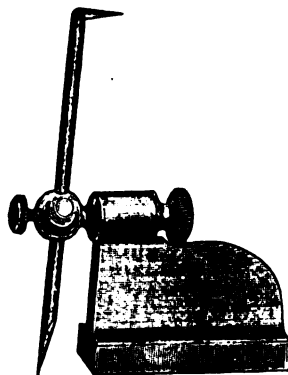


Fig. 1903.

## Prices, Surface Gauges.

8 inches, small size.  
Per dozen.....\$24.00  
12 inches, large size.  
Per dozen.....\$33.00

## DOUBLE CALLIPER.

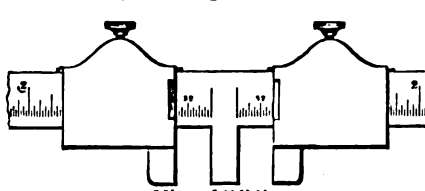


Fig. 1898.

Whole length, 7 1/2 inches, and will calliper 3 1/2 x 1 1/2 inches. Weight, 4 ounces. Very useful for machinists and others, for selecting iron and steel, as both the width and thickness of flat bars can be tested at once.

Each.....\$8.00

A larger size, with heavier bar and wood handle is made for use in rolling or forging iron or steel. Extreme length, including handle, 12 inches, and will calliper 3 1/2 x 1 1/2 inches. Each.....\$15.00

## WIRE GAUGE AND CALLIPER.

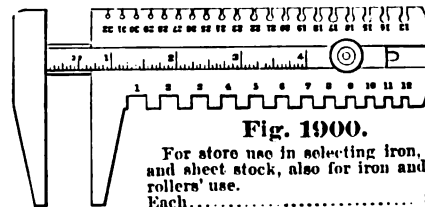


Fig. 1900.

For store use in selecting iron, steel, and sheet stock, also for iron and steel rollers' use.  
Each.....\$8.00

The wire gauge sizes are from Nos. 1 to 32, inclusive, old standard. The calliper tongue is graduated to inches and 32ds, and will measure 4-inch flat, round or square stock. The jaws and wire gauge are hardened.

## STEEL CALLIPER RULE.



Fig. 1902.

Each.....\$2.00

## COMBINATION GAUGE, Figs. 1903 & 1904.

Fig. 1903 represents a surface gauge, capable of being set with the greatest accuracy, and, being strong, is not liable to spring or change from its position. In this form it can also be used to find the center of pieces for lathe work; place the gauge upon a surface plate, bring the piece to be centered in contact with the scratch, and the center will be accurately determined, thus saving the trouble of revolving the piece upon centers. Fig. 1904 represents the same as a depth gauge; this is done by unscrewing the binding nut and reversing the barrel, thus making a really valuable tool for all purposes of planing where perfect accuracy is indispensable, such as dovetailing, fitting slide rests, etc. Should the depth to be gauged exceed the length of the pointer, it can be replaced by a piece of Stub's wire.

Another important feature belongs to Fig. 1904. By reversing the pointer it becomes a scratch gauge, perfect in every respect, light, yet strong, capable of lining every description of work with the utmost nicety.

Per dozen.....\$24.00

## STEEL MARKING GAUGE.

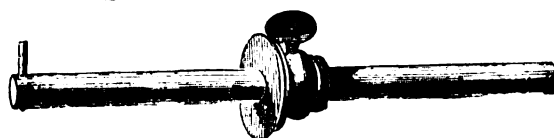


Fig. 1906.

Price.....per dozen, \$6.50

## CALLIPER SQUARE.

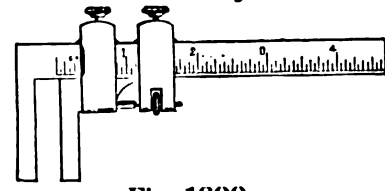


Fig. 1899.

One side divided to 64ths, the other to 100ths of inches.

Sizes.	Length of Jaws.	Without Adjusting Screw.	With Adjusting Screw, like Cut
2 ins.	3/4 in.	Each.....\$2.25	Each.....\$3.50
4 "	1 1/2 "	".....3.50	".....4.50
9 "	3 1/4 "	".....9.00	".....11.00

4 inch calliper squares, with adjusting screw, and hardened jaws for measuring boiler plate.  
Each.....\$6.00

## COMBINED GAUGE AND CALLIPER.



Fig. 1901.

This tool combines dividers, inside and outside callipers, and a graduated double scratch gauge. It will calliper a round bar 2 inches in diameter. The beam is 12 inches long, 1/2 inch wide, 3/8 inch thick, and is graduated to 16ths, 32ds and 64ths of an inch.  
Each.....\$5.00

## SURFACE GAUGE.

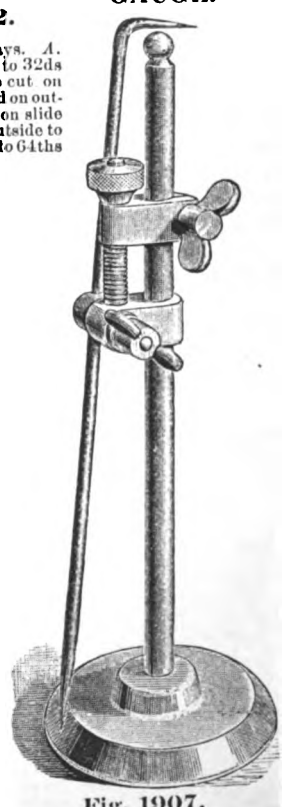


Fig. 1907.

## Description, Fig. 1902.

These rules are divided in four ways. A. Divided on outside like cut on slide to 32ds and 64ths. B. Divided on outside like cut on slide to 64ths and 100ths. C. Divided on outside to 8ths, 16ths, 32ds and 64ths; on slide to 32ds and 64ths. D. Divided on outside to 8ths, 16ths, 32ds and 64ths; on slide to 64ths and 100ths.

Fig. 1904.

## Price, Surface Gauge.

Fig. 1907.

Drop forged of bar steel finished and hardened.

8 inches.  
Per dozen.....\$33.00

# THORNTON N. MOTLEY, NEW YORK. STANDARD INTERNAL AND EXTERNAL CYLINDRICAL GAUGES.

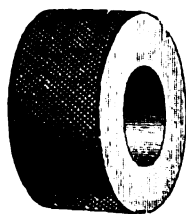


Fig. 1008.



Fig. 1009.

Price per set,  $\frac{1}{8}$  to 2 inches, varying by  $\frac{1}{16}$ ths.....\$325.00  
Prices for single pieces on application.

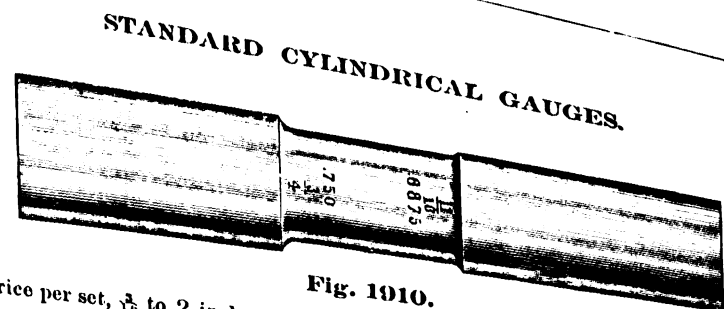


Fig. 1010.

Price per set,  $\frac{1}{8}$  to 2 inches, varying by  $\frac{1}{16}$ ths.....\$75.00  
Larger or special sizes made to order.

## CRESCENT PATTERN GAUGE.



Fig. 1011.

## FLAT BAR PATTERN GAUGE.



Fig. 1012.

## COMBINED PATTERN GAUGE.



Fig. 1013.

Prices one set Gauges, each, Figs. 1011 and 1012.  

	Class B.	Class C.
$\frac{1}{4}$ to 4 inches inclusive (by $\frac{1}{16}$ ths).....	\$279.56	\$223.78
$\frac{1}{4}$ to 6 " " (4 to 6, by $\frac{1}{16}$ ths).....	407.32	325.98

When ordering, state clearly how sizes are to vary, whether by  $\frac{1}{16}$ ths,  $\frac{1}{8}$ ths or  $\frac{1}{4}$ ths of inches; also what pattern is wanted. When not otherwise stated, class B will be sent. Prices for single pieces on application.

## POCKET SHEET METAL GAUGE.

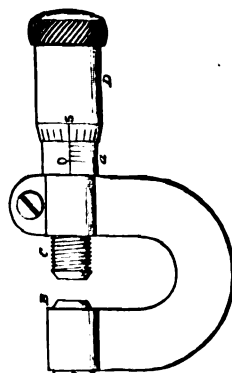


Fig. 1014.

Cut is full size.

This gauge will measure the thickness of sheet metal or other material, by thousandths of an inch up to three-tenths of an inch at any point within half an inch of the edge. Means of adjustment are provided in case of wear by continued use.

Each.....\$1.00  
In Morocco Case.....each, 4.50

## CORRECTIVE GAUGE.

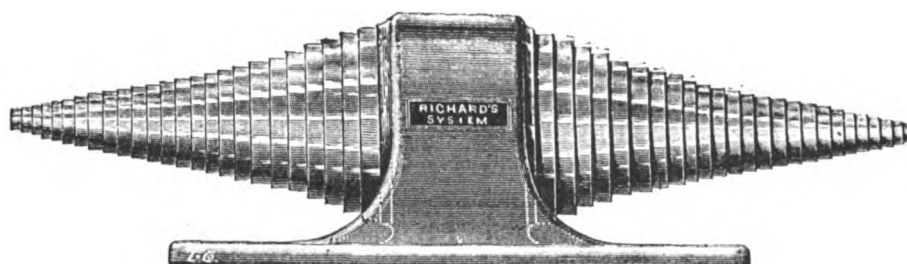


Fig. 1015.

61 sizes ( $\frac{1}{4}$  to 4 inches, by  $\frac{1}{16}$ ths).....per set, 107.20  
If mounted in walnut case, \$4.00 extra.

## STEP GAUGE.



Fig. 1017.

$\frac{1}{4}$ in. up to 2 ins. inclusive, each disc,	\$1.20	Above $\frac{1}{4}$ ins. and up to 5 ins.	\$3.60
Above 2 ins. and up to 3 ins.	1.60	" 5 ins. "	4.80
" 3 ins. " 4 ins.	2.10	" 5 1/2 ins. "	6.00
" 4 ins. " 4 1/2 ins.	2.80		

Handles extra, \$3.00 to \$6.00, according to size.  
Discs,  $\frac{1}{4}$  to 4 ins., vary by  $\frac{1}{16}$ ths. Discs, 4 to 6 ins., vary by  $\frac{1}{8}$ ths.

## SHEET METAL GAUGE.

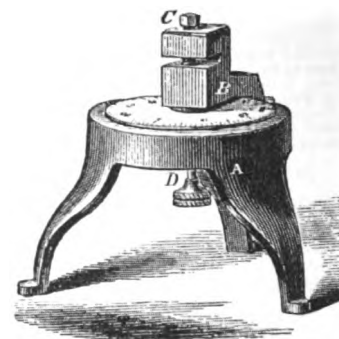


Fig. 1016.

Cut is one-third size.

For the use of machinists, jewelers, silversmiths, sheet brass rollers and workers, sheet-iron workers, rubber manufacturers, paper makers, type founders, etc.

Each.....\$15.00

## ROLLING MILL GAUGES.

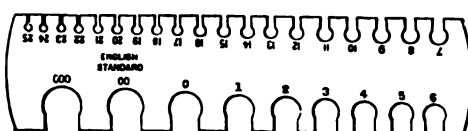


Fig. 1018.

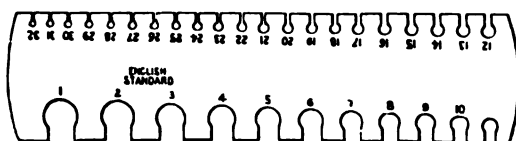


Fig. 1019.

No. 000 to 25.....each, \$2.50  
" 1 to 32.....each, 3.00

## POCKET SCREW AND WIRE GAUGE.



Fig. 1020, Front View.

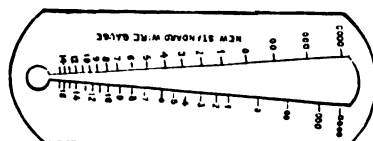


Fig. 1021, Back View.

Above cuts are one-half size.  
Each.....\$2.50

## LARGE SCREW AND WIRE GAUGE.

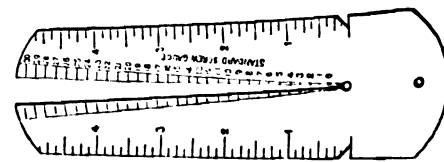


Fig. 1022, Front View.

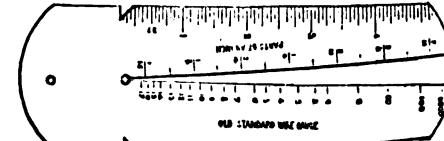


Fig. 1023, Back View.

Above cuts are one-third size.  
Each.....\$3.50 Extra thick, each, \$4.50

**JEWELERS' WIRE GAUGE.**

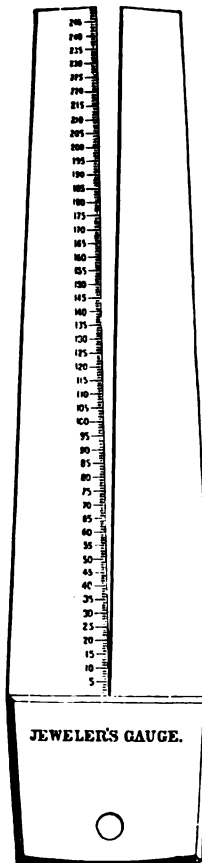


Fig. 1024.

**Price, Jewelers' Wire Gauge.**

**Fig. 1024.**

Cut is one-half size.  
Made especially for manufacturing jewelers.

Each ..... \$5.00  
One edge of the angular slot is graduated into 250 parts, and figured to give the size in thousandths of inches. For example, a size of wire which passed down half-way into the slot, will stop opposite 125, is 125-1000ths of an inch in diameter. The angular slot has no sharp edge to injure the stock gauged.

**ENGLISH STANDARD WIRE GAUGE.**

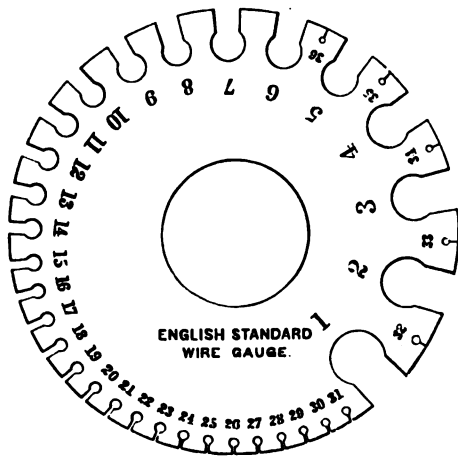


Fig. 1032.

Cut is two-thirds size.

Nos. 1 to 36 ..... each, \$2.00  
" 6 to 36 ..... " 1.50

**SCREW PITCH GAUGE.**

For 25 pitches.  
U. S. Standard Thread.



Fig. 1035.

Cut is two-thirds size.

Each ..... \$1.75

**GAUGES.**

**ANGULAR WIRE GAUGE.**

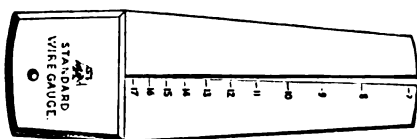


Fig. 1025.

Cut is one-third size.

Nos. 000 to 9 ..... each, \$6.00  
" 7 to 17 ..... " 6.00  
Divided with both old and new standard ..... " 10.00  
Nos. 15 to 28 ..... each, \$6.00  
" 25 to 40 ..... " 6.00  
" 25 to 40 ..... " 10.00

**WATCH GUARD CHARM.**



Fig. 1027.

Center Gauge with Split Ring.

Plain ..... each, \$0.25  
Nickel plated ..... .30  
Silver ..... .40  
Gold ..... .50

The graduations on the center gauges are 14ths, 20ths, 24ths and 32ds.

**TWIST DRILL AND STEEL WIRE GAUGE.**

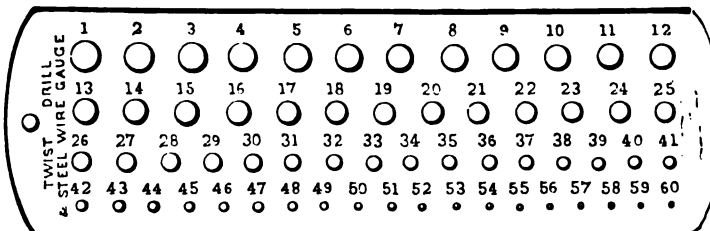


Fig. 1028.

For gauging twist drills and Stubs' drawn steel wire.

Each ..... \$1.50

**Center Gauge.**



Fig. 1030.

Cut is half size.

Each ..... \$0.25

The angles used in this gauge are 60 degrees. The four divisions upon the gauge of 14, 20, 24 and 32 parts to the inch, are very useful in measuring the number of threads to the inch of taps and screws. The following parts to the inch can be determined by them, viz: 2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, 20, 24 and 32.

Also on hand, center gauges of the Whitworth or English standard, 55 degrees.

**STEEL MUSIC WIRE GAUGE.**

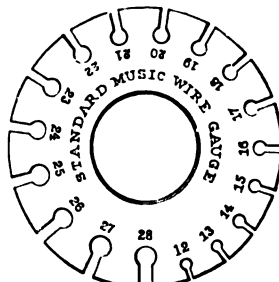


Fig. 1033.

Cut is full size.

Each ..... \$1.50

**STANDARD SCREW THREAD GAUGE.**

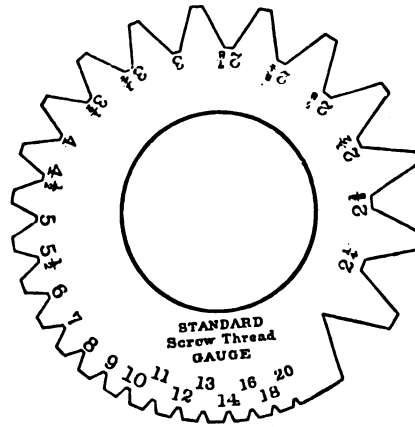


Fig. 1036.

Cut is full size.

Each ..... \$2.00

**HOLE GAUGE.**

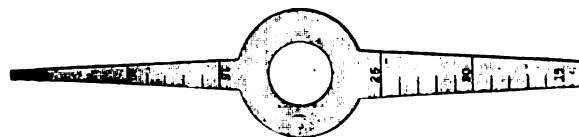


Fig. 1026.

This gauge will be found useful in determining the discharging capacity of sprinkling pipes, for fire extinguishers in factories, etc.

Each ..... \$2.00

**WATCH GUARD CHARM.**



Fig. 1029.

Steel Rule, one inch, with Split Ring.

Plain ..... each, \$0.25  
Nickel plated ..... .30  
Silver ..... .40  
Gold ..... .50

Either of two varieties of graduations on the rules will be sent (as ordered), as follows:

One edge each to 16ths, 50ths, 64ths and 100ths, or, one edge each to 8ths, 16ths, 32ds and 64ths.

**NUT AND WASHER GAUGE.**

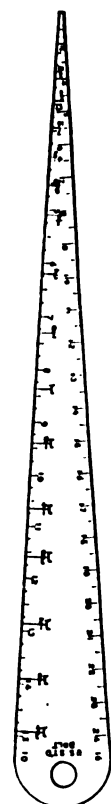


Fig. 1031.

**Price, Nut and Washer Gauge.**

**Fig. 1031.**

Cut is one-third size.

For measuring diameter and thickness, also holes of nuts and washers.

Each ..... \$6.00

The figures upon one edge are for 16ths and 32ds, and on the other for 10ths and 20ths of inches. Also U. S. standard sizes for holes to tap for bolts. Opposite side is graduated the same as a steel rule to 32ds of inches.

**AMERICAN STANDARD WIRE GAUGE.**

Adopted by the brass manufacturers, Jan., 1858.

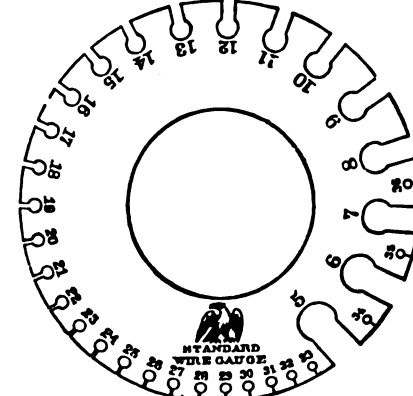


Fig. 1034.

Cut is full size.

These gauges are made from the best steel, and are tempered, adjusted, and warranted accurate.

Nos. 0 to 36 ..... each, \$3.50  
" 5 to 30 ..... " 2.50

**SCREW PITCH GAUGE.**

For 16 pitches.  
V Thread.

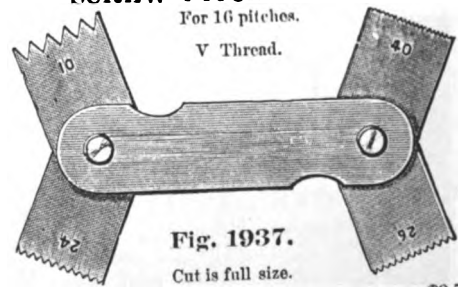


Fig. 1037.

Cut is full size.

Each ..... \$0.75





**SQUARES, BEVELS, PLUMB BOBS, ETC.**

**UNIVERSAL OR CENTRE SQUARE.**

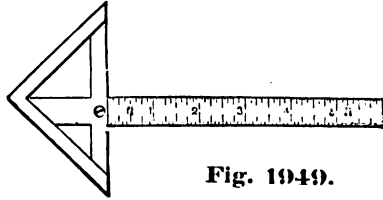


Fig. 1949.

Sizes, inches, 4 6 8 10 12  
Each..... \$2.00 2.50 3.50 5.00 6.00  
**BEVEL PROTRACTOR,**  
With sliding arm and half circle divided to degrees.

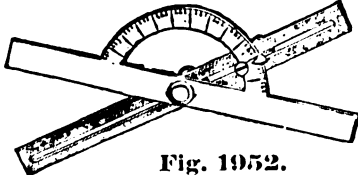


Fig. 1952.

With 6 inch Sliding Arm..... Each, \$6.50  
" 10 " " " " " " 7.00  
**THE DIAGRAPH.**

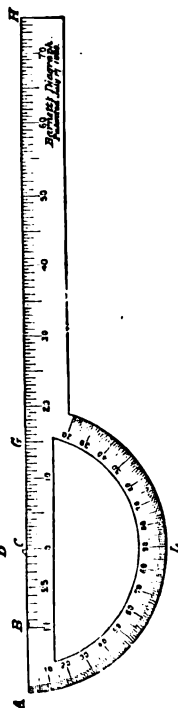


Fig. 1955.

**KEY SEAT RULE.**

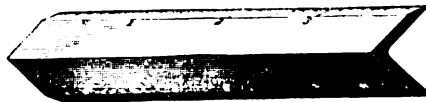


Fig. 1959.

Sizes, inches, 4 6 8  
Each..... \$2.50 3.00 3.75  
**PLUMB BOB. BRASS PLUMB BOB.**



Fig. 1960.

Bronze, with steel point and without screw cap.  
Weight, 8 ounces.  
Each..... \$0.75

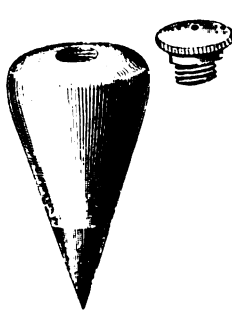


Fig. 1961.

Cast brass, steel pointed, screw top.  
No. 5, Weight, 6 ounces.  
Per doz..... \$7.25  
No. 6, weight, 11 1/2 ozs.  
Per doz..... \$10.00

**T SQUARE AND UNIVERSAL BEVEL, Hardened Cast Steel.**

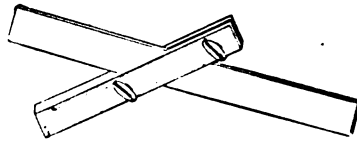


Fig. 1950.

The head is 5 inches, and the tongue 8 inches long. Both parts are hardened, and ground straight and square. The tongue may be used at the extreme end of the beam. The wide side of the three cornered washer should always be placed next to the blade.  
Each..... \$5.00

**UNIVERSAL BEVEL.**

**LARGE SIZE.**

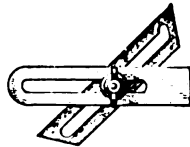


Fig. 1953.

The head and tongue are each 1 1/4 inches long and 1/4 inch wide. Thickness of head, 3-32 inch, and of tongue, 1-32 inch.  
Each..... \$1.50

The head and tongue are each 3 inches long, and 5/8 inch wide. Thickness of head 1/8 inch, and of tongue, 3-64 inch.  
Each..... \$2.00

**SMALL SIZE.**

**STANDARD SURFACE PLATES.**

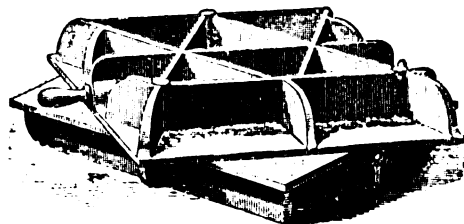


Fig. 1956.

Surface Plates are as indispensable in obtaining correct surfaces as Standard Cylindrical Gauges are for sizes of holes.

Sizes, Inches.	Weight.	Sizes, Inches.	Weight.
3 1/2 x 12	11 lbs.	12 x 18	53 lbs.
4 1/2 x 6	5 "	14 x 14	47 "
6 x 6	7 "	14 x 18	62 "
6 x 12	19 "	16 x 16	62 "
6 x 50	120 "	18 x 18	65 "
6 1/2 x 18	30 "	18 x 24	128 "
7 x 7 1/2	11 "	18 x 36	228 "
7 x 10	15 "	20 x 78	813 "
8 x 12	21 "	24 x 24	164 "
9 x 9	16 "	24 x 36	298 "
9 x 14	27 "	24 x 48	442 "
10 x 15	35 "	24 x 60	666 "
10 x 30	99 "	36 x 68	1024 "
12 x 12	29 "	Other sizes to order.	

Prices on Application.

**IMPROVED TRAMMEL POINTS.**

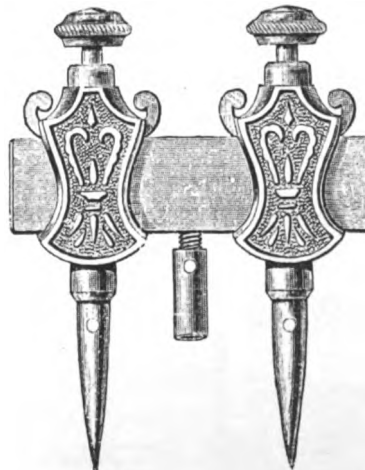


Fig. 1962.

Bronze Metal, Steel Points.

No. 1, Small..... Per pair, \$1.00  
" 2, Medium..... " 1.25  
" 3, Large..... " 1.75

**DRAUGHTSMEN'S T SQUARES.**

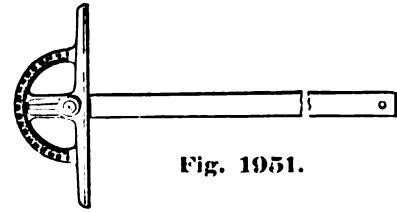


Fig. 1951.

Extreme length of head, 9 inches. Diameter of arc, 4 1/2 inches. Divided to half degrees. Blade, 1 1/4 inches wide, 3-64 inches thick. The heads are made of bronze, and the blades of steel.  
With 36 inch Blade..... Each, \$10.00

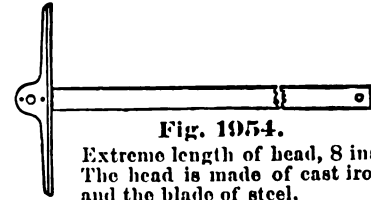


Fig. 1954.

Extreme length of head, 8 ins. The head is made of cast iron and the blade of steel.

20 in. blade, 1 in. wide, 3-64 in. thick, ea., \$5.00  
24 " " " 3-64 " " 6.00  
36 " " " 3-64 " " 7.00  
With 10 in. head and 36 in. blade, 1 1/4 in. wide, 3-64 in. thick..... " 9.00

**OPEN STEEL TRIANGLES, For Draughtsmen.**

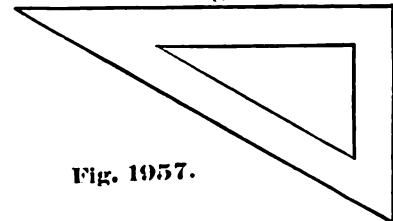


Fig. 1957.

**Prices, Triangles, Figs. 1957 & 1958.**

Angles, 30, 60 and 90 degrees.  
Large, sides 6, 10 3/8 & 12 ins., 3/4 in. wide \$4.00  
Small, " 3 1/2, 6 1-16 & 7 ins., 5/8 " 3.00  
Angles, 45, 45 and 90 degrees.  
Large, sides 8, 8 & 11 1/4 ins., 3/4 in. wide, \$4.00  
Small, " 5, 5 & 7 1-16 ins., 5/8 " 3.00  
Thickness, 1-16 inch.

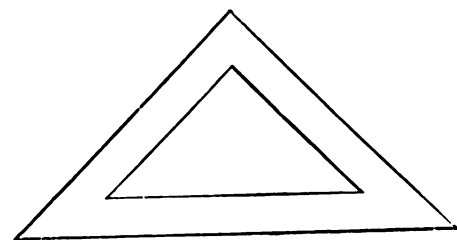


Fig. 1958.

**JAPANNED PLUMB BOB.**



Fig. 1963.

Iron, Japanned Staple Top.  
No. 1, Weight, 9 ounces each.  
Per doz..... \$1.50

**Prices, Fig. 1964.**

Bronze Metal.

No. 1, Small, steel point,  
Each..... \$1.50  
No. 2, Large, steel point,  
Each..... 1.75

Iron.

No. 5, Large, steel point,  
Each..... \$1.00

**ADJUSTABLE PLUMB BOB.**

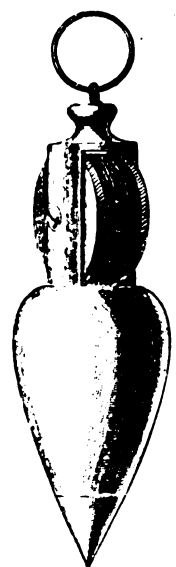


Fig. 1964.

## PLUMB BOBS AND TROWELS.

IRON  
PLUMB BOB.

Fig. 1965.

Iron, japanned, adjusted top.  
No. 2, weight, 9½ ounces each.  
Per dozen.....\$1.60

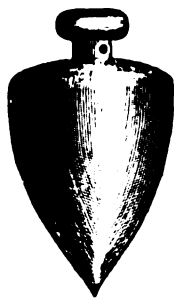
LEAD  
PLUMB BOB.

Fig. 1966.

Lead, steel pointed.  
No. 3, weight, 12 ounces each.  
Per dozen.....\$5.00  
No. 4, weight, 1¼ pounds each.  
Per dozen.....\$6.50

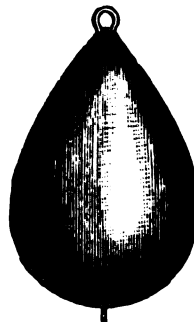
LEAD  
PLUMB BOB.

Fig. 1967.

Lead, masons' wired.  
No. 13, weight, 1 pound each.  
Per dozen.....\$5.00  
No. 15, weight, 2 pounds each.  
Per dozen.....\$8.50

IRON PLUMB BOB.



Fig. 1968.

Japanned, adjusted top.  
No. 00, weight, 1 lb. 2 ozs. each.  
Per dozen.....\$3.00  
No. 0, weight, 2 lbs. 10 ozs. each.  
Per dozen.....\$4.00

## LONDON PATTERN BRICK TROWEL.

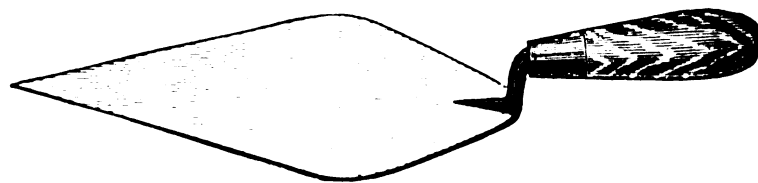


Fig. 1969.

## NEW YORK PATTERN BRICK TROWEL.

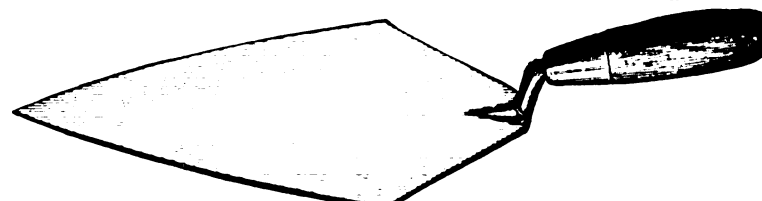


Fig. 1970.

## Prices, London and New York Pattern Brick Trowels.

Sizes, inches.....	6	6½	7	7½	8	8½	9	9½	10	10½	11	11½	12
Per dozen.....	\$5.25	5.50	5.75	6.00	6.25	6.50	6.75	7.00	7.25	7.50	7.75	8.00	8.25

With double ferrules add \$1.00 per dozen.

## PHILADELPHIA PATTERN BRICK TROWEL.

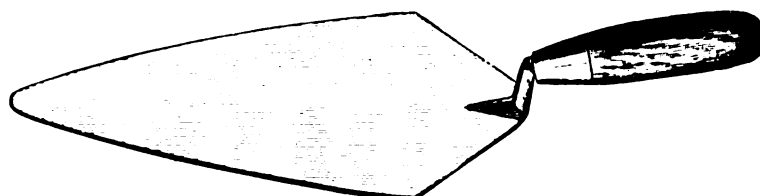


Fig. 1971.

Sizes, inches.....	8	8½	9	9½	10	10½	11	11½	12
Per dozen.....	\$6.25	6.50	6.75	7.00	7.25	7.50	7.75	8.00	8.25

With double ferrules add \$1.00 per dozen.

## BOSTON PATTERN BRICK TROWEL.

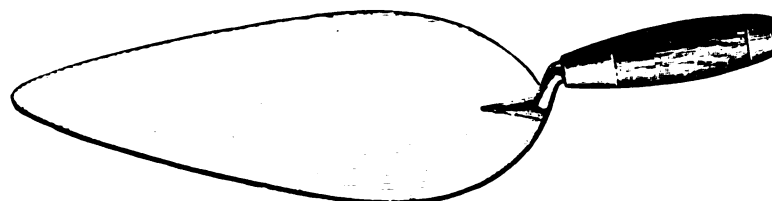


Fig. 1972.

Sizes, inches.....	6	6½	7	7½	8	8½	9	9½	10
Per dozen.....	\$6.25	6.50	6.75	7.00	7.25	7.50	7.75	8.00	8.25

Boston Pattern Trowels always made double ferrule.

## BRADE'S ENGLISH BRICK TROWELS.

Sizes, inches.....	9	9½	10	10½	11	11½	12	12½	13	14
London Pattern.....	per dozen, \$10.00	10.50	11.00	11.50	12.00	12.50	13.00	13.50	14.00	15.00
" " double ferrule.....										
New York Pattern.....	8.00	8.50	9.00	9.50	10.00	10.50	11.00	11.50	12.00	13.00

## DISSTON'S BRICK TROWELS.

Sizes, inches.....	7½	8	8½	9	9½	10	10½	11	11½	12	13
London Pattern.....	per dozen, \$7.50	8.00	8.50	9.00	9.50	10.00	10.50	11.00	11.50	12.00	13.50
Philadelphia Pattern.....	9.00	9.50	10.00	10.50	11.00	11.50	12.00	12.50	13.00	13.50	15.00

## POINTING TROWEL.



Fig. 1973.

Sizes, inches....	4	4½	5	5½	6
Per dozen.....	\$2.95	3.00	3.10	3.20	3.40

## PLASTERING TROWEL.

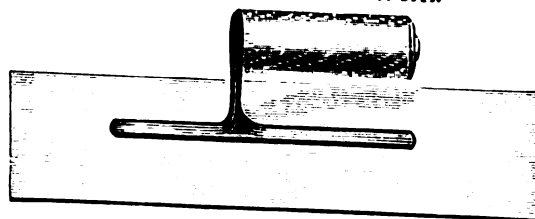


Fig. 1974.

Sizes, ins. 4x10 4½x10½ 4¾x10¾ 5x11 5½x12
Per doz. \$6.50 7.00 7.25 7.50 9.00

## CORNER TROWEL.

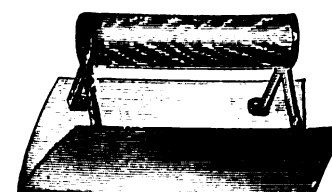


Fig. 1975.

Sizes, inches.....	5	6	7
Per dozen.....	\$7.00	7.50	8.00

MOULDER'S TOOLS.

SPOON.



Fig. 1976.

Width, inches.....	1	1 1/4	1 1/2
Per doz.....	\$6.00	7.50	9.00

SQUARE STRAIGHT.



Fig. 1979.

Width, inch,	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Per doz.....	\$5.25	6.00	6.75	7.50	8.25

YANKEE.



Fig. 1981.

Width, inch,	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Per doz.....	\$5.25	6.00	6.75	7.50	8.40

STOVE TOOL.



Fig. 1984.

Sizes, inch.....	3/8	1/2	5/8	3/4
Per doz.....	\$4.80	5.40	6.00	6.60

FLUTE.



Fig. 1987.

Width, inch..	3/8	5/8	7/8
Per doz.....	\$7.50	8.25	9.00

SQUARE CORNER.



Fig. 1990.

Width, inches,	2	2 1/2	3
Per doz.....	\$6.00	7.20	8.40

CIRCULAR FLANGE.

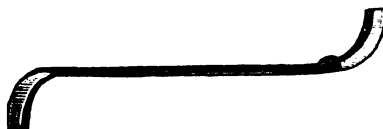


Fig. 1993.

Width, in.,	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Per doz...	\$10.50	12.00	13.50	15.00	16.50

FLAT FLANGE.



Fig. 1996.

Width, in.,	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Per dozen	\$9.75	10.50	12.00	13.50	15.00

HEART AND SQUARE.

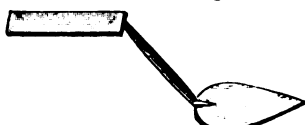


Fig. 1999.

Width, inches,	1	1 1/4	1 1/2
Per doz.....	\$6.00	7.50	9.00
Width, inches,	1 3/4	2	
Per doz.....	\$10.50	12.00	

LIFTER.



Fig. 1977.

Length, inches,	10	12	14	16	18	20
1/8 in., per doz.	\$4.50	5.25	6.00			
1/4 " "	4.50	5.25	6.00			
3/8 " "	5.25	6.00	6.75			
1/2 " "	6.00	6.75	7.50	8.25		
5/8 " "		7.50	8.25	9.00		
3/4 " "		8.25	9.00	9.75	10.50	11.25
7/8 " "		9.00	9.75	10.50	11.25	12.00
1 " "		9.75	10.50	11.25	12.00	12.75

FLANGE LIFTER.



Fig. 1982.

Sizes, ins., 1/2x14	1/2x16	5/8x14	5/8x16	3/4x14	3/4x16	3/4x18	
Per doz ...	\$12.75	13.50	13.50	14.25	14.25	15.00	15.75
Sizes, ins., 7/8x16	7/8x18	7/8x20	1x16	1x18	1x20		
Per doz ...	\$15.75	16.50	17.25	16.50	17.25	18.00	

HUB TOOL.



Fig. 1985.

3/4 inch, per doz.,	\$12.00	1 inch, per doz.,	\$15.00
---------------------	---------	-------------------	---------

HUB LIFTER.



Fig. 1988.

Sizes same as Lifters Fig. 1977.  
Prices, add to list price of Lifters, \$3.60 per doz.

BOX LIFTER.

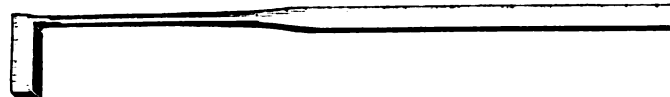


Fig. 1991.

Sizes same as Lifters Fig. 1977.  
Prices, add to list price of Lifters, \$6.00 per doz.

HALF ROUND CORNER.



Fig. 1994.

Width, inches....	1	1 1/4	1 1/2	1 3/4	2
Per doz.....	\$5.25	6.00	6.75	7.50	8.25

SQUARE TROWEL.



Fig. 1997.

Length, inches,	4	4 1/2	5	5 1/2	6
1 in. per doz.	\$6.00	6.60	7.20	7.80	8.40
1 1/4 " "	7.20	7.80	8.40	9.00	9.60
1 1/2 " "	8.40	9.00	9.60	10.20	10.80
1 3/4 " "	9.60	10.20	10.80	11.40	12.00
2 " "	10.80	11.40	12.00	12.60	13.20

FINISHING TROWEL.

No. 1.



Fig. 2000.

Sizes same as Fig. 1997.  
Prices, 60 cents per dozen  
less than Square Trowels.

FINISHING TROWEL.

No. 2.



Fig. 2001.

Sizes same as Fig. 1997.  
Prices, 96 cents per dozen  
less than Square Trowels

TAPER ROUND.



Fig. 1978.

Width, inches...	3/4	1	1 1/4	1 1/2
Per dozen.....	\$5.40	6.00	7.50	9.00

DOUBLE SQUARE.



Fig. 1980.

Width, in...	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Per dozen ..	\$4.80	5.40	6.00	6.75	7.50

BENCH LIFTER.



Fig. 1983.

Sizes, inch...	3/4	1/2	5/8	3/4
Per doz.....	\$5.40	6.00	6.60	7.20

OVAL DOG TAIL.



Fig. 1986.

Sizes, inches ....	3/4	1	1 1/4
Per doz.....	\$6.00	6.75	8.25

BEAD.



Fig. 1989.

Width, inch..	1/2	5/8	3/4
Per doz.....	\$6.00	6.75	7.50

PIPE SLICK.



Fig. 1992.

Per doz.....	\$5.40
--------------	--------

FLANGE AND BEAD.



Fig. 1995.

Width, inch	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Per doz. ..	\$0.00	9.75	10.50	11.25	12.00

FLAT AND CIRCULAR FLANGE.



Fig. 1998.

Width, in.,	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Per dozen	\$12.00	13.50	15.00	16.50	18.00

HEART TROWEL.



Fig. 2002.

Width, inches,	2	2 1/4	2 1/2
Per doz.....	\$6.00	7.50	9.00
Width, inches,	2 3/4	3	
Per doz.....	10.50	12.00	



FOUNDRY SUPPLIES, STEEL AND RATTAN BROOMS.

MOULDER'S RIDDLE.

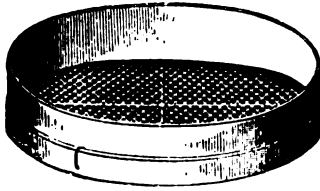


Fig. 2017.

Brass Riddles.				
Diameter, inches,	14	16	18	20
Per dozen.....	\$12.00	13.75	16.25	18.75

Steel Riddles.				
Diameter, inches,	16	18	20	
Per dozen.....	\$7.00	8.00	9.00	

Iron Riddles.				
Diameter, inches,	16	18	20	
Per dozen.....	\$7.00	8.00	9.00	

Galvanized Iron Riddles.				
Diameter, inches,	16	18	20	
Per dozen.....	\$9.00	10.00	11.00	

IMPROVED SAND SIFTER.

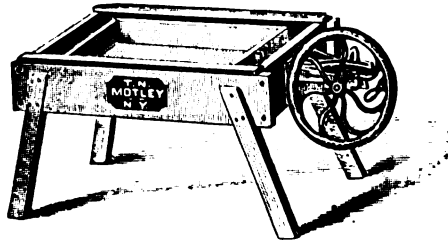


Fig. 2018.

Hand Sifters.		
No. 1. Weight, 125 lbs.....	each,	\$33.00
Extra Sieves .....	"	3.50
Length, 4 ft. 9 ins. Breadth, 2 ft. Height, 2 ft.		
5 ins. Sieve, 2 ft. 4 ins. x 17 ins. Motion, 1½ ins.		

Power Sifters.		
No. 2. Weight, 160 lbs.....	each,	\$70.00
Extra Sieves .....	"	6.00
Length, 7 ft. Breadth, 2 ft. 8 ins., Height, 2 ft.		
5 ins. Sieve, 4 ft. 5 ins. x 17 ins. Motion, 3 ins.		
Countershaft extra, furnished if desired.		

MOULDER'S RIDDLE.

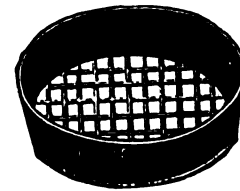


Fig. 2019.

Brass Riddles.			
Diameter, inches .....	18	20	
Per dozen.....	\$20.00	22.00	

Iron Riddles.			
Diameter, inches .....	18	20	
Per dozen.....	\$12.50	15.00	

Galvanized Iron Riddles.			
Diameter, inches .....	18	20	
Per dozen.....	\$14.00	16.50	

FOUNDRY BRUSH,  
Hard Bristle.

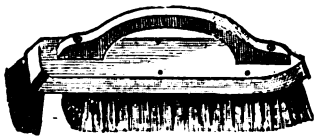


Fig. 2020.

With Handle.....	per doz.,	\$7 00
Without " .....	"	7.00

STEEL CASTING BRUSH,  
Round.

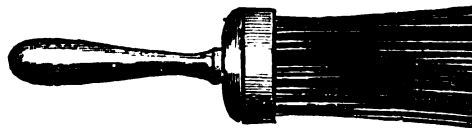


Fig. 2021.

Length of Wire, ins., 4½	6	8 long hdl.
Per dozen.....	\$7.00	9.00 12.00

FOUNDRY BRUSH,  
Soft Bristle.



Fig. 2022.

No 1 .....	per doz.,	\$7.00
" 2 X.....	"	8.00

STEEL CASTING BRUSH,  
Square.

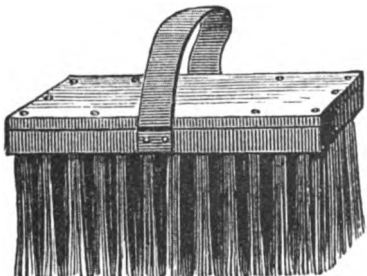


Fig. 2023.

Length of Wire.	Four Rows.	Five Rows.	Six Rows.
2 ins., per doz.,	\$5.50	6.50	
2½ " " "	6.00	7.00	
3 " " "	6.50	7.50	9.00
3½ " " "	7.00	8.00	10.50
4 " " "	7.50	8.50	12.00

Prices, Rattan Push Brooms,  
Fig. 2024.

WIRE DRAWN.			
12 ins., 4 rows, per doz.....	\$4.50		
14 " 4 " " .....	5.00		
14 " 5 " " .....	5.50		
14 " 6 " " .....	6.00		
16 " 4 " " .....	5.50		
16 " 5 " " .....	6.00		
16 " 6 " " .....	6.50		

EXTRA FULL WITH WIRE STAPLES.			
14 ins., 4 rows, per doz.....	\$5.50		
16 " 4 " " .....	6.00		

PUSH BROOM.  
Steel or Rattan.

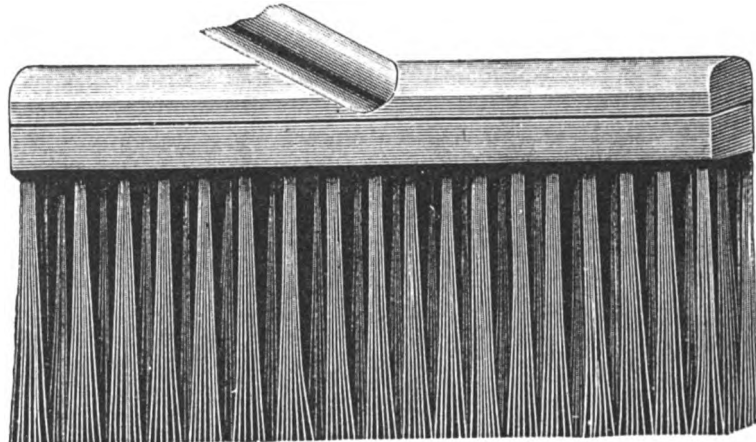


Fig. 2024.

Prices, Steel Push Brooms.

12 inches, 4 rows, per doz.,	\$12.00	12 inches, 6 rows, per doz.,	\$14.00
14 " 4 " " .....	14.00	14 " 6 " " .....	16.00
16 " 4 " " .....	16.00	16 " 6 " " .....	18.00

Prices, Rattan Push Brooms.

4 inches, 4 rows, per doz.,	\$5.50	16 inches, 4 rows, per doz.,	\$6.00
-----------------------------	--------	------------------------------	--------

Prices, Rattan Corporation Brooms.

16 inches, 4 rows, per doz.,	\$8.50	16 inches, 5 rows, per doz.,	\$9.00
------------------------------	--------	------------------------------	--------

Handles for Steel and Rattan Brooms.

Furnished only when ordered. Extra, per doz., \$0.35.

STEEL CASTING BRUSH,  
Handled.

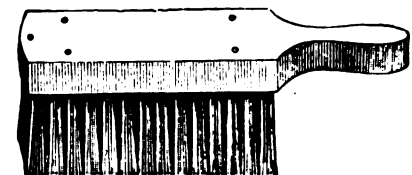


Fig. 2025.

Length of Wire.	Number of Rows.	Per Dozen.
2½ inches.	2	\$4.00
2½ " "	3	5.00
2½ " "	4	6.00
2½ " "	5	7.00

Prices,  
Rattan Push Brooms.  
Fig. 2024.

PITCH SET. SQUARE BACKS.			
12 inches, 4 rows... ..	per doz.,	\$4.50	
14 " 4 " .....	"	5.00	
16 " 4 " .....	"	5.50	
Round Back extra.....	"	.50	

Prices,  
Coir or Bass Push Brooms.

12 inches, 4 rows.....	per doz.,	\$5.00
14 " 4 " .....	"	5.50
16 " 4 " .....	"	6.00
9 " Pavement, ....	"	4.00



## BROOMS AND BRUSHES.

## UPRIGHT RATTAN BROOM.

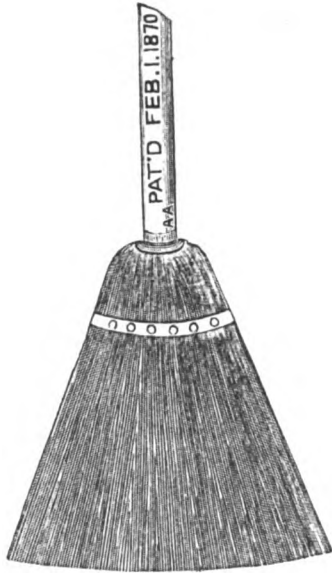


Fig. 2026.

A,	Patent Upright.....	per doz.,	\$5.50
AA,	" " " " " "	"	6.00
AAA,	" " " " " "	"	6.50
Handles included.			

## UPRIGHT STEEL BROOM.

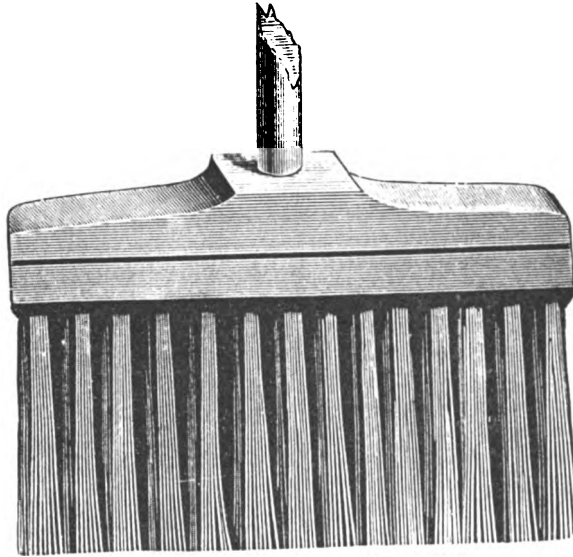


Fig. 2027.

10 inches, 4 rows.....	per doz.,	\$15.00
12 " 4 " " " " "	"	15.00
Handles extra.....	"	.35

## ALDEN'S PATENT UPRIGHT RATTAN BROOM.

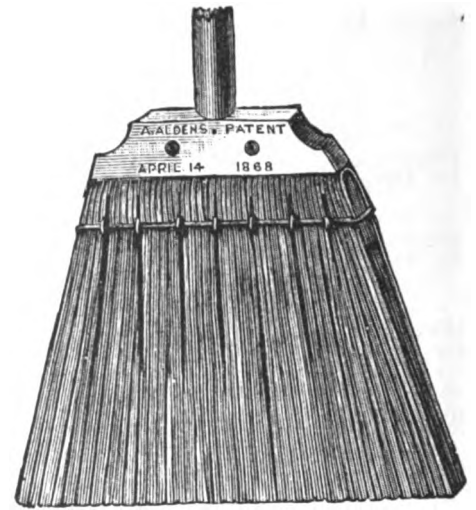


Fig. 2028.

Best Rattan.....	per doz.,	\$6.00
Handles included.		
This is a first class broom for horse car stables.		

## CORN BROOMS.

House, Railroad and Ship Brooms, Hearth Brooms and Whisk Brooms, all styles, qualities and sizes. Special prices quoted on application.

## STEEL WIRE TRACK BROOM.

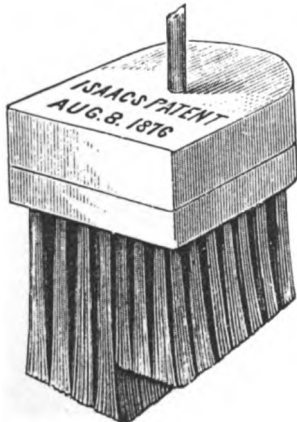


Fig. 2029.

No. 2, Ordinary size.....	per doz.,	\$40.00
" 3, Large size, extra heavy...	"	80.00

## BRISTLE BROOM.

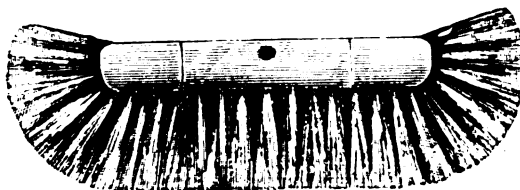


Fig. 2030.

C Bristle Brooms.			
Black Enameled Block and Handles.			
No. 1, 10 inch block, all bristles..	per doz.,	\$	8.80
" 2, 11 " " " " "	"	"	12.00
" 3, 12 " " " " "	"	"	14.50
" 4, 13 " " " " "	"	"	17.80
" 5, 14 " " " " "	"	"	21.00

## Hotel or Railway Bristle Brooms.

Extra heavy long black bristles.			
No. 14, 14 inch block.....	per doz.,	\$24.30	
" 16, 16 " " " " "	"	37.26	
" 20, 20 " " " " "	"	48.60	
" 36, 36 " " " " "	"	81.00	

## STEEL WIRE TRACK BROOM.

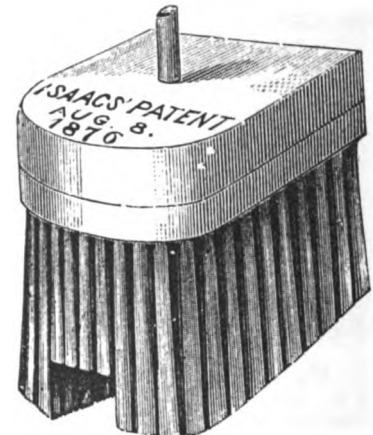


Fig. 2031.

No. 4, Large size, extra heavy...	per doz.,	\$80.00
-----------------------------------	-----------	---------

## POPE'S HEAD.

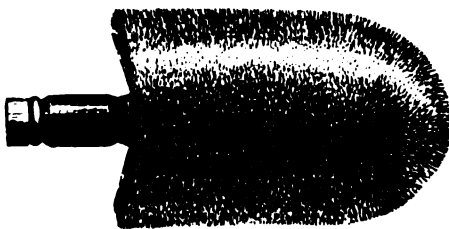


Fig. 2032.

No. 1, All bristles.....	per doz.,	\$16.20
" 3, Tampico.....	"	11.76

## WALL AND WINDOW BRUSH.

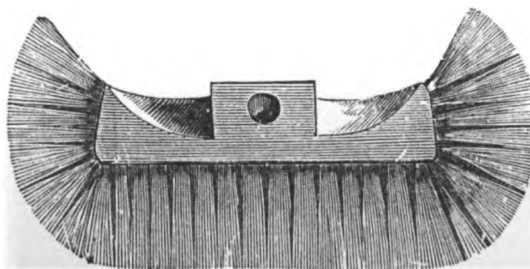


Fig. 2033.

No. 1, All bristles, 9 in. block..	per doz.,	\$19.40
" 2, Tampico, 9 " " " "	"	11.76
" 3, Mixed center, 7 " " " "	"	9.70
" 4, All bristles, 7 " " " "	"	14.50

## POPE'S EYE.

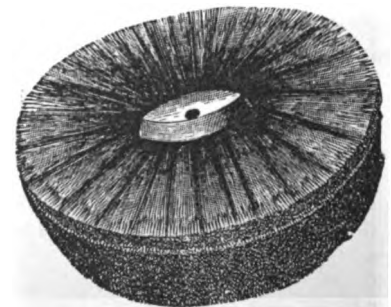


Fig. 2034.

No. 1, All bristles.....	per doz.,	\$ 9.70
" 2, " drawn with wire " "	"	16.20
" 3, Mixed center.....	"	7.30

## CAR WASHERS, DUSTERS AND BRUSHES.

McLAUGHLIN'S  
PATENT CAR WASHER.

Fig. 2035.

This Brush will not scratch the paint or break glass, as it has an endless band or ring of vulcanized rubber around the edge of block. Made of best bristles, copper fastened.

No. 4, per doz., \$12.00	No. 2, per doz., \$24.00
" 3, " 20.00	" 1, " 36.00
" 1, Extra.....	" 45.00

FEATHER DUSTER.

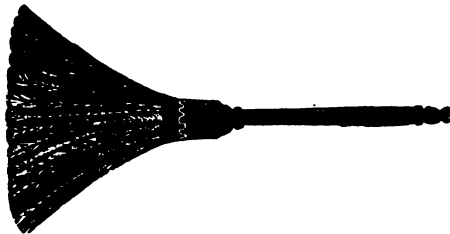


Fig. 2036.

Ostrich Feather Dusters, Bell, Full Center.

5 ins., per doz., \$ 2.50	14 ins., per doz., \$40.00
6 " " 4.50	16 " " 44.00
7 " " 7.00	18 " " 45.00
8 " " 10.00	20 " " 46.00
9 " " 15.00	22 " " 47.00
10 " " 22.00	24 " " 48.00
12 " " 33.00	

PATENT WINDOW BRUSH.



Fig. 2037.

This Brush has a projecting row of bristles around the block which prevents the possibility of breaking glass while in use.

All Gray Bristles.

Diameter, inches,	4	4 1/2	5
Per doz.....	\$7.50	10.00	13.50

## Ostrich Carriage Dusters,

For Railroad Cars or Carriages, very heavy.

Numbers .....	1	2	3	4	5
Per dozen.....	\$42.00	54.00	60.00	66.00	72.00

## Turkey Feather Dusters,

Made of Split Feathers.

Sizes, inches.....	10	11	12	13	14	15	16
Per dozen.....	\$12.60	15.00	18.00	21.00	23.40	25.20	30.00

## ROUND END WINDOW BRUSH.



Fig. 2038.

No. 4, 2 foot handle... per doz., \$8.80

## DUSTING BRUSH.

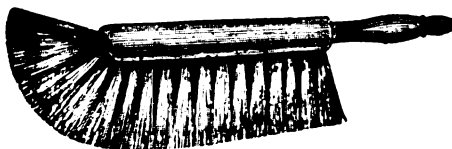


Fig. 2039.

## Dusting Brushes,

Enameled Block.

No. 1, All Bristles, 8 inch block... per doz., \$3.66	
" 2, " 9 " " " " 4.00	
" 3, " 10 " " " " 4.86	
" 4, " 11 " " " " 6.00	

## Extra Dusting Brushes,

Enameled Block.

No. 1, All Bristles, 8 inch block... per doz., \$4.90	
" 2, " 9 " " " " 5.66	
" 3, " 10 " " " " 6.50	
" 4, " 11 " " " " 8.50	

## Extra Dusting Brushes,

Black Walnut Block.

No. 10, All White Br'sls, 8 in. bl'k, per doz., \$ 6.50	
" 11, " 9 " " " " 7.70	
" 12, " 10 " " " " 8.80	
" 13, " 11 " " " " 10.50	

## FACTORY DUSTING BRUSH.



Fig. 2040.

No. 3, All Gray Bristles..... per doz., \$3.24	
" 4, " " " " " 4.86	

## STOVE BRUSH.



Fig. 2042.

No. 1..... per doz., \$1.62	
" 2..... " 3.66	
" 5, Bristles..... " 5.26	

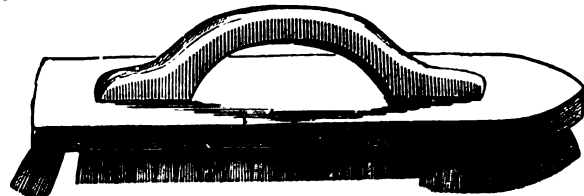
SCRUBBING BRUSH,  
Handled.

Fig. 2044.

No. 171, White Tampico..... per doz., \$1.54	
" 172, " " " " " 1.70	
" 173, " " " " " 1.88	
" 174, Gray " " " " " 1.70	
" 175, " " " " " 1.88	
" 176, " " " " " 2.00	
" 81, Gray Bristles " " " 3.08	
" 121, " " " " " 3.88	
" 161, " " " " " 4.46	
" 92, Extra California Sluice.. " 4.06	

## SCRUBBING BRUSH.

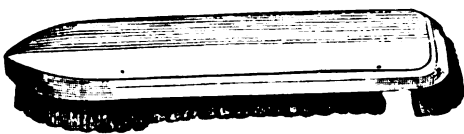


Fig. 2041.

No. 72, White Tampico..... per doz., \$1.46	
" 75, Gray " " " " " 1.62	
" 120, Gray Bristles, " " " 3.66	
" 160, " " " " " 4.20	
" 51, Hotel, Gray Bristles..... " 6.48	

## SCRUBBING BRUSH.

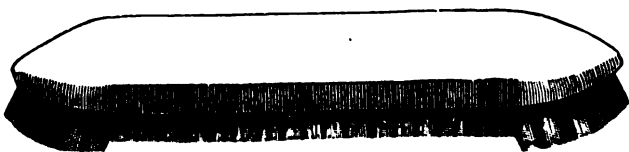


Fig. 2043.

No. 42, White Tampico..... per doz., \$2.44	
" 43, Gray " " " " " 2.84	
" 44, Gray Bristles " " " 4.46	

## Steamboat or Hotel Scrub Brushes.

No. 4, White Tampico..... per doz., \$2.00	
" 55, " " " " " 2.44	
" 77, " " " " " 2.84	
" 5, Gray Tampico " " " 2.84	
" 7, " " " " " 3.24	
" 3, Gray Bristles " " " 4.46	
" 47, " " " " " 5.26	

## TAR BRUSH, LONG HANDLE.

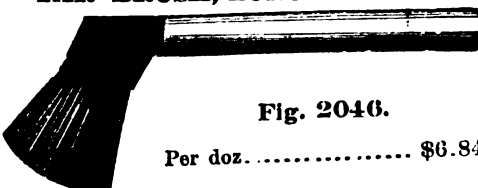


Fig. 2046.

Per doz..... \$6.84

## PAINTERS' DUSTERS.

No. 1, All Bristles, per doz., \$4.46	
" 2, " " " " " 5.68	
" 3, " " " " " 8.80	

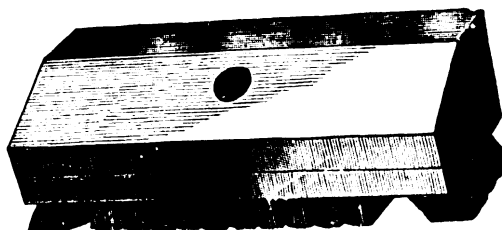
CLAMP OR DECK  
SCRUBBING BRUSH.

Fig. 2045.

With Block and Handles.

No. of Rows.....	6	7	8
Per dozen.....	\$4.00	4.50	5.26

## MARKING BRUSHES,

Round or Flat Cedar Handles, Tin Ferrule, assorted sizes.

Bristle..... per gross, \$ 8.00	
Extra Bristle..... " 12.00	
Camel Hair, round..... " 12.00	

## TAR BRUSH, SHORT HANDLE.

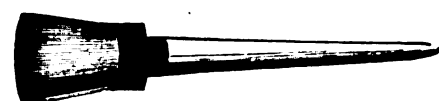


Fig. 2047.

Per dozen..... \$5.46

## BRUSHES.

## SHOE BRUSH, CURVED HANDLE.



Fig. 2048.

Nos.....	31	13	98	100	110	3
Per doz.....	\$1.60	2.00	2.76	3.08	3.24	3.66
Nos.....	82	60	9	10	45	43
Per doz.....	\$4.20	4.50	5.28	6.08	6.50	8.80

## KALSOMINE BRUSH.

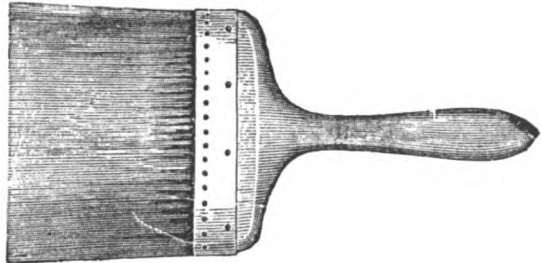


Fig. 2051.

## XG Kalsomine Brushes.

White bristles outside, gray mixed center.

Width, inches.....	6	7	8
Per doz.....	\$9.00	13.00	15.00

## E Kalsomine Brushes.

All white selected bristles.

Width, inches.....	6	7	8
Per doz.....	\$22.50	29.40	36.24

## PAINT BRUSH.

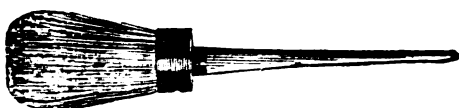


Fig. 2054.

## B Paint Brushes.

WIRE BOUND.

All white bristles outside, gray mixed center.

No. 6... per doz., \$1.64	No. 2-0... per doz., \$5.32
" 5... " 1.90	" 3-0... " 6.28
" 4... " 2.18	" 4-0... " 7.36
" 3... " 2.60	" 5-0... " 8.48
" 2... " 3.14	" 6-0... " 11.68
" 1... " 3.84	" 7-0... " 12.94
" 0... " 4.50	

## XX Paint Brushes.

WIRE BOUND.

All white bristles.

No. 5... per doz., \$2.18	No. 2-0... per doz., \$ 7.10
" 4... " 2.72	" 3-0... " 8.74
" 3... " 3.28	" 4-0... " 10.94
" 2... " 4.08	" 5-0... " 13.10
" 1... " 4.90	" 6-0... " 15.24
" 0... " 6.00	" 7-0... " 17.50

## FLAT PAINT BRUSH.

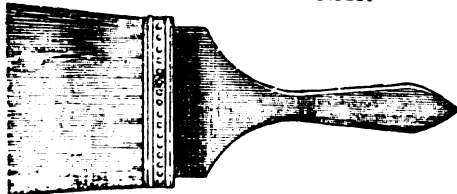


Fig. 2056.

## Extra Flat Paint Brushes.

LEATHER STRAP, NAILED.

Pure bristles, white outside, gray center.

Inches... 3	3 1/2	4	4 1/2	5	5 1/2
Per doz... \$3.96	4.36	6.30	8.74	13.10	16.40

## Queen Flat Paint Brushes.

METAL STRAP, NAILED.

Finest white imported bristles.

Inches... 3	3 1/2	4	4 1/2
Per doz... \$4.32	6.48	8.64	10.80

## HORSE BRUSH, LEATHER BACK.

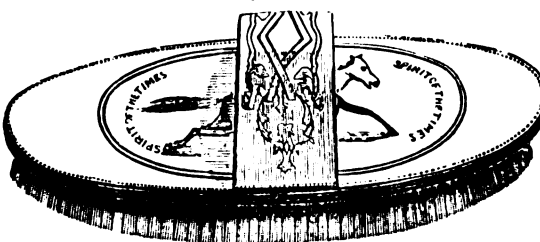


Fig. 2049.

No. 5, Mixed black outside.....	per doz., \$4.00
" 10, " gray ".....	" 4.50
" 250, " white ".....	" 5.66
" 26, " spotted ".....	" 6.50
" 49, Bristles, all gray.....	" 7.00
" 30, Mixed black outside.....	" 8.00
" 48, " gray ".....	" 8.50
" 32, Bristles, all gray.....	" 17.40

## WHITE WASH HEAD.

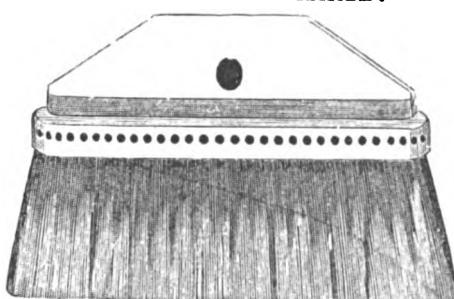


Fig. 2052.

## B White Wash Heads.

Mixed stock, white outside, gray center.

Width, inches, 6	6 1/2	7	7 1/2	8	8 1/2	9	9 1/2
Per doz.....	\$2.00	2.58	3.16	4.00	5.18	6.32	7.50

## Extra White Wash Heads.

Made extra full, all bristles, white outside and gray center, riveted blocks.

Width, inches, 7 $\frac{1}{2}$	8	8 $\frac{1}{2}$	9	9 $\frac{1}{2}$	
Per doz.....	\$7.20	8.32	12.24	16.20	20.88

## PATENT SASH TOOLS.

Made of fine white French bristles.

No. 1... per doz., \$0.50	No. 6... per doz., \$1.30
" 2... " .60	" 7... " 1.50
" 3... " .76	" 8... " 1.70
" 4... " .90	" 9... " 2.00
" 5... " 1.10	" 10... " 2.40

## OK SASH TOOLS.

Made of selected "Beau Blanc" Bristles.

No. 1... per doz., \$0.68	No. 6... per doz., \$1.76
" 2... " .82	" 7... " 2.04
" 3... " .94	" 8... " 2.32
" 4... " 1.22	" 9... " 2.60
" 5... " 1.50	

## ROOF BRUSH.

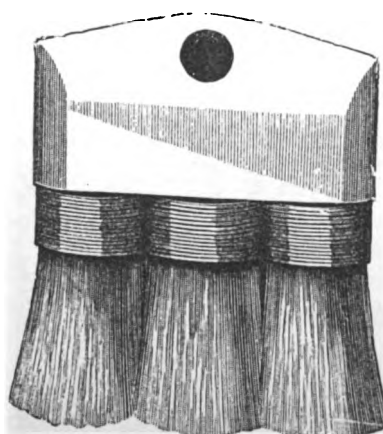


Fig. 2057.

With four-foot handles.

For painting roofs, car tops and ships.

2 Knots B, mixed center.....	per doz., \$13.68
3 " " ".....	" 17.10
3 " all bristles.....	" 27.36
4 " " very long stock.....	" 41.00

## SHOE BRUSH.

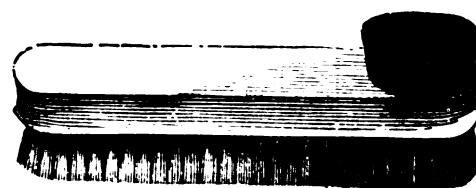


Fig. 2050.

## Black Bristles.

Nos.....	33	35	161	70	80
Per doz.....	\$3.66	5.26	5.28	5.66	6.00
Nos.....	90	53	75	55	187
Per doz.....	\$6.50	8.10	11.34	16.20	21.06

## WHITE WASH BRUSH.

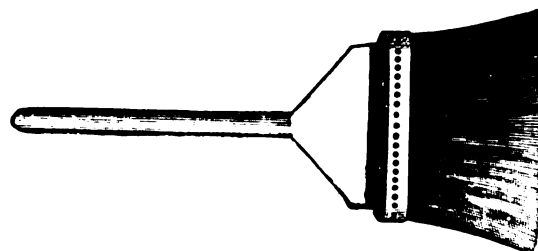


Fig. 2053.

## B White Wash Brushes.

Mixed white outside, gray center.

Width, ins.....	6 1/2	7	7 1/2	8
Per doz.....	\$5.00	6.00	8.50	10.00

## Extra White Wash Brushes.

Extra long unbleached bristles outside, mixed center.

Width, inches....	7 1/4	8 1/4	9 1/4	10 1/4
Per dozen.....	\$12.50	15.50	18.50	21.50

## OVAL VARNISH BRUSH.



Fig. 2055.

## Gloss Oval Varnish Brushes.

WIRE BOUND.

Made of fine white bristles.

No. 6... per doz., \$1.62	No. 2-0... per doz., \$5.18
" 5... " 2.00	" 3-0... " 6.04
" 4... " 2.44	" 4-0... " 7.48
" 3... " 2.72	" 5-0... " 8.64
" 2... " 3.00	" 6-0... " 10.36
" 1... " 3.44	" 7-0... " 12.08
" 0... " 4.32	" 8-0... " 14.40

## Extra Oval Varnish Brushes.

WIRE BOUND.

Made of all pure white Okatka Bristles.

No. 6... per doz., \$2.18	No. 2-0 per doz., \$ 7.38
" 5... " 2.46	" 3-0... " 9.00
" 4... " 2.86	" 4-0... " 10.66
" 3... " 3.54	" 5-0... " 13.94
" 2... " 4.50	" 6-0... " 16.40
" 1... " 5.32	" 7-0... " 18.04
" 0... " 6.14	" 8-0... " 19.70

## FLAT VARNISH BRUSH.



Fig. 2058.

## E Flat Varnish Brushes.

Ordinary thickness, fine white French bristles.

Inches... 1	1 1/2	2	2 1/2	3
Per doz... \$1.36	1.90	2.44	3.28	4.08

## Extra Flat Varnish Brushes.

Best double thick finest white French bristles.

A superb brush.

Inches... 1	1 1/2	2	2 1/2	3
Per doz... \$1.90	2.74	4.36	6.00	7.10

# FLUE BRUSHES AND TUBE SCRAPERS.

## SPENCER FLUE BRUSH.

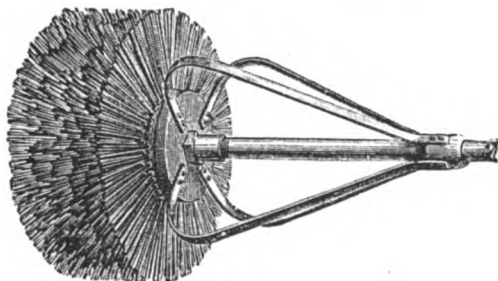


Fig. 2059.

For Flues 6 inches and larger, all sizes, \$1.25 per inch diameter of brush.

## SPENCER TUBE BRUSH.

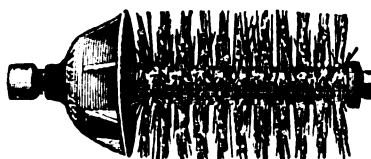


Fig. 2060.

Diam., ins.	1½	2	2¼	2½	2¾	3	3¼
Each	\$2.00	2.00	2.25	2.50	2.75	3.00	3.25

Diam., ins.	3½	3¾	4	4½	5	5½	6
Each	\$3.50	3.75	4.00	4.50	5.00	5.50	6.00

## WOOD CENTER FLUE BRUSH.

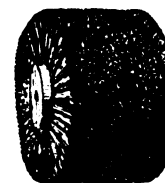


Fig. 2061.

Steel wire, whalebone and rattan.

Steel Wire, per inch diameter	\$1.00
Whalebone, " "	.75
Rattan, " "	.30

## STEEL TUBE BRUSH.

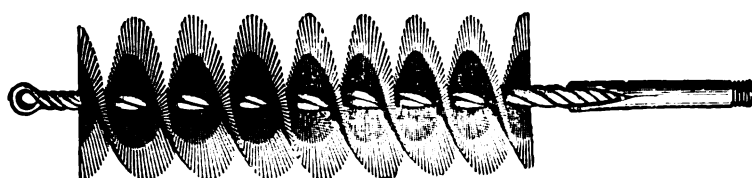


Fig. 2062.

Outside diameter.....inches,	1	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	4	4½	5	5½	6	7
Whalebone Brushes.....each,	\$0.75	.75	.80	.90	1.00	1.00	1.25	1.40	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.50
Steel Wire " "....."	1.10	1.10	1.20	1.20	1.25	1.40	1.50	1.60	1.75	2.00	2.25	2.50	2.75	3.00	3.25	4.50

## WHALEBONE TUBE BRUSH.

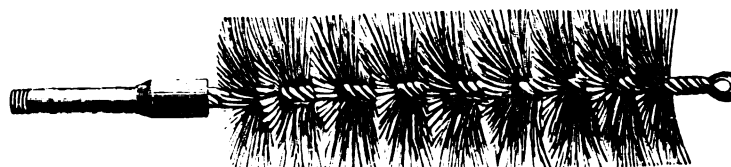


Fig. 2063.

## STEEL COIL BRUSH AND FLEXIBLE SCRAPER COMBINED.

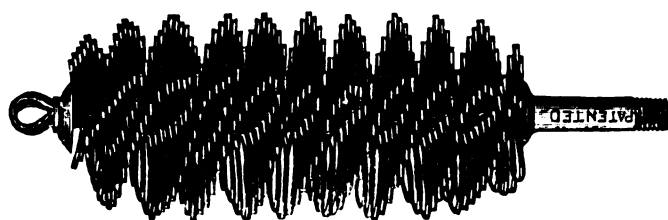


Fig. 2064.

Having 360 steel scrapers touching all parts of the surface, it is the most perfect tube cleaner. If any of the steel scrapers get out of shape it proves that there is a blister in the tube.

Sizes, inches.....	1 to 1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4
Each	\$1.00	1.10	1.20	1.30	1.40	1.50	1.65	1.75	1.90	2.00

Over 4 inches, 75c. per inch outside measurement.

## ELLIPTIC SPRING STEEL AND ADJUSTABLE TUBE SCRAPER.

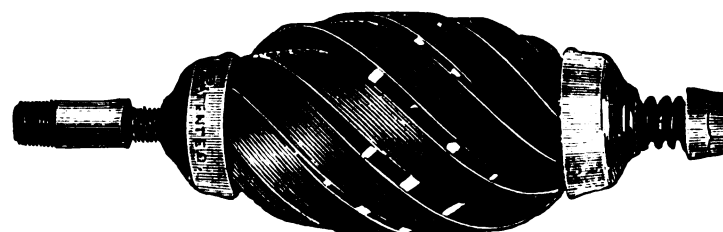


Fig. 2065.

Warranted to remove any scale or blisters and pass ferrules. The only cleaner that will scrape out the hard scales in the tubes which form after a steam tube cleaner has been in use.

Sizes, inches.....	1 to 2	2¼	2½	2¾	3	3¼	3½	3¾	4
Each	\$2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00

Over 4 inches, \$1.25 per inch, outside measurement.

## ELASTIC TUBE SCRAPER.

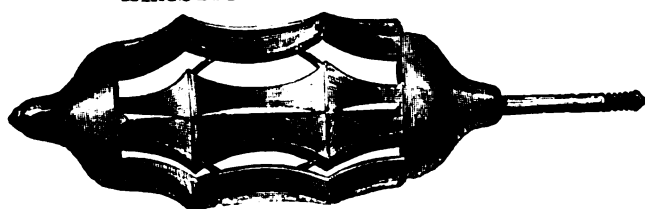


Fig. 2066.

All sizes.....	per inch, \$1.00
Outside measurement of tubes.	

## SMITH'S ADJUSTABLE TUBE SCRAPER.

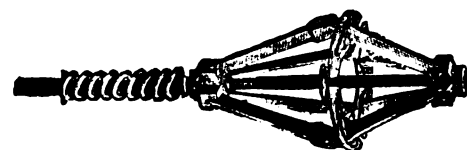


Fig. 2067.

\$1.00 per inch, outside diameter of tubes.

To contract, turn the shaft of scraper to the left; to expand, turn it to the right.

## "ENGINEERS' FAVORITE" TUBE CLEANER.

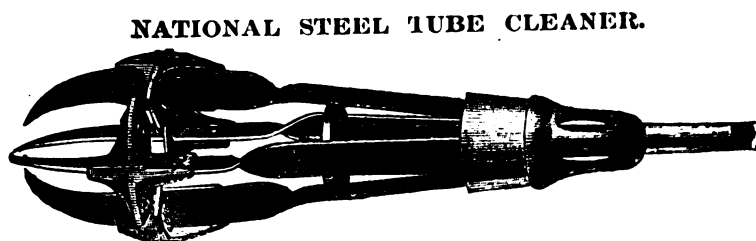


Fig. 2068.

All the working parts are of steel. It has no small parts to get out of order. Can be adjusted so as to fit exactly the inside of the tube.

Sizes, inches.....	1½	1¾	2	2¼	2½	3
Each	\$2.00	2.00	2.00	2.25	2.50	3.00
Sizes, inches.....	3¼	3½	4	4½	5	5½
Each	\$3.25	3.50	4.00	4.50	5.00	5.50

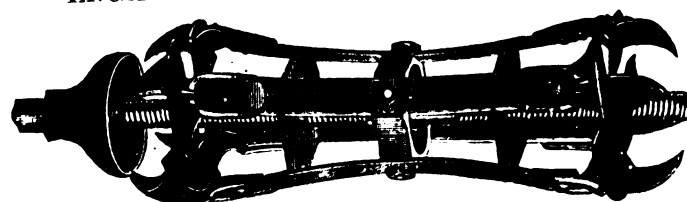


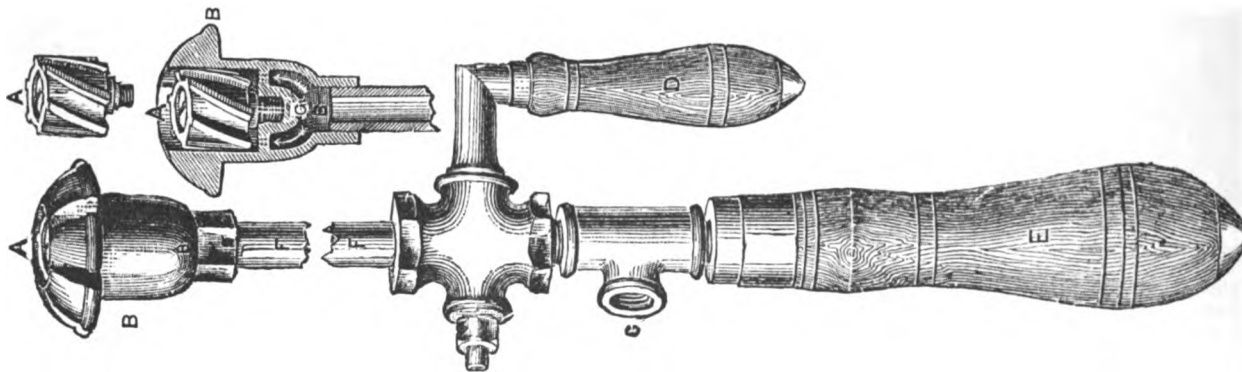
Fig. 2069.

This cleaner unites with the flexibility of its steel springs the double head also the expanding or adjustable feature.

Sizes, inches.....	2	2¼	2½	2¾	3	3¼
Each	\$2.00	2.25	2.50	2.75	3.00	3.25
Sizes, inches.....	3½	3¾	4	4½	5	6
Each	\$3.50	3.75	4.00	4.50	5.00	7.50

## STEAM TUBE AND FLUE CLEANERS.

## ATHERTON STEAM BOILER TUBE CLEANER.



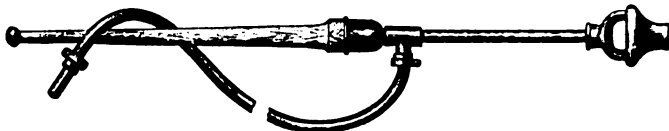
**Fig. 2070.**

The peculiar manner in which steam is introduced into the tube, which is in a rapidly revolving screw-like form, caused by the great velocity of the spiral fan wheel *A*, and the air which is drawn through the air spaces or slots in the rose head, increases the current which is created by the revolution of the fan collecting the accumulated sediment in the flue, and causing it to revolve with increasing speed and force as it traverses the tube until ejected at the opposite end.

Outside Diameter of Tubes.	Tube Cleaners, Each.	Size of Extension Pipe F.	Extension Pipe, Per Foot.	Size of Steam Hose.	Steam Hose, Per Foot.	Couplings, Per Pair.	Clamps, Per Pair.
1½ and 1¾ inches.	\$7.50	¾ inch.	\$0.09	1½ inch.	\$0.51	\$1.10	\$0.30
2 " 2¼ "	9.00	¾ "	.09	1½ "	.51	1.10	.30
2½ " 2¾ "	10.50	1½ "	.10½	¾ "	.67	1.10	.30
3 " 3¼ "	12.50	1½ "	.10½	¾ "	.67	1.10	.30
3½ " 4 "	15.00	1½ "	.10½	¾ "	.67	1.10	.30

## GRIM'S PATENT INJECTOR BLOWER.

### For Cleaning Steam Boiler Tubes.



**Fig. 2071.**

The principle on which this Cleaner is constructed will cause a powerful current of heated air and steam to be driven through the tubes by the use of a comparatively small amount of steam. It will clean the tubes of a boiler when hot. It has no movable parts.

No. 1 will clean tubes 2 to 3 inches diameter.....each,	\$5.00
" 2 " " 3 to 4 1/2 " " .....	" 6.00

**Steam Hose extra. Furnished only when ordered.**

## A AND D STEAM TUBE CLEANER.



**Fig. 2072.**

**Simple in construction and therefore very durable.**

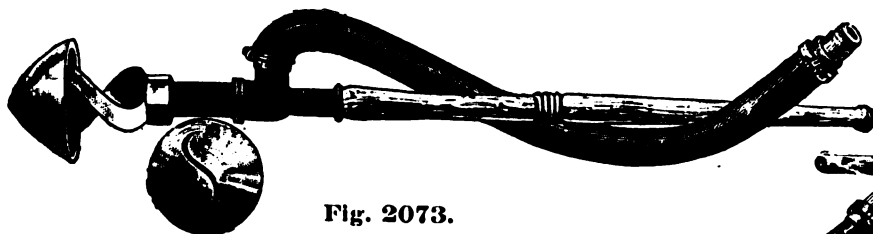
No. 1	cleans tubes, inside measure, 1	to 1½ inches.....	each, \$7.00
" 2	" " " "	1¾ to 2½ " .....	" 8.00
" 3	" " " "	2¾ to 3¼ " .....	" 9.00
" 4	" " " "	3½ to 4 " .....	" 10.00
" 5	" " " "	4½ to 8 " .....	" 12.00
" 6	" " " "	8½ to 16 " .....	" 15.00

**Steam Hose extra.   Furnished only when ordered.**

When ordering Tube Cleaners, Figs. 2071 and 2072, please state whether wanted for upright or horizontal boilers. For upright boilers state inside diameter of the boiler and distance from bottom of door to tubes. For horizontal boiler state distance from tube sheet to front of boiler.

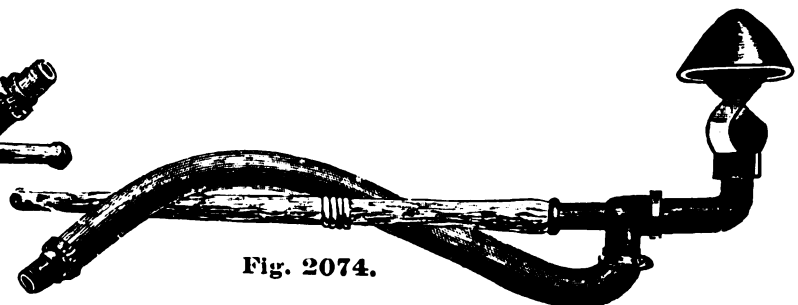
## CYCLONE STEAM BOILER TUBE CLEANERS.

**For Horizontal Boilers.**



**Fig. 2073.**

**For Upright Boilers.**



**Fig. 2074.**

**The auger shaped steam passage in this cleaner is without obstruction or device from the induction end to the outlet of said passage, whereby full pressure is obtained. This cleaner requires no oiling or adjusting, and is ready for use at all times by turning on the steam.**

Nos.	Will Clean Tubes Outside Measurement.	Cleaners Complete, except Hose, Each.	Cleaner Heads only, Each.	Nos.	Will Clean Tubes Outside Measurement.	Cleaners Complete, except Hose, Each.	Cleaner Heads only, Each.
0	$\frac{3}{4}$ to $1\frac{1}{4}$ inches.	\$7.50	\$5.00	5	6 to 10 inches.	\$13.00	\$11.00
1	$1\frac{1}{4}$ to $2\frac{1}{4}$ "	8.00	5.50	6	6 to 12 "	14.00	12.00
2	$2\frac{1}{2}$ to $3\frac{1}{2}$ "	9.00	6.00	7	6 to 14 "	15.00	13.00
3	4 to 5 "	10.00	7.00	8	6 to 16 "	16.00	14.00
4	6 to 8 "	12.00	9.00				

Steam Hose extra.      **Furnished only when ordered.**

When ordering state whether wanted for horizontal, upright or locomotive boiler. If for horizontal boiler give distance from tube sheet to front of boiler. If for upright boiler give inside diameter of boiler and distance from tubes to bottom of door. If for locomotive boiler give length of fire box.



PAVERS' AND QUARRY TOOLS, ETC.

SAND SCREEN.

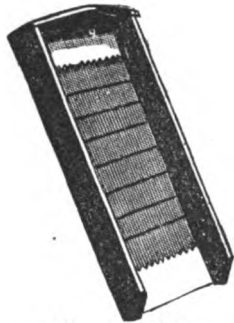


Fig. 2075.

26 inches.....each, \$1.50  
24 " ..... " 4.00

WHITE MORTAR SCREENS.

Single..... each, \$1.75  
Double..... " 2 75

COBBLE STONE RAMMER.

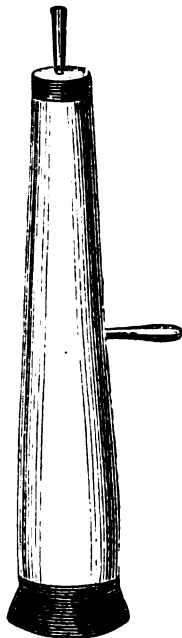


Fig. 2076.

Locust Stick, Best Wrought  
Iron Band.....each, \$7.50

SAND RAMMER.



Fig. 2077.

Cast Iron Butt, with Pipe  
Handle.....each, \$2.50

BELGIAN STONE RAMMER.

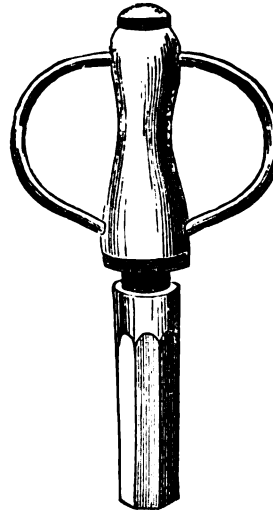


Fig. 2078.

Best Wrought Iron, with Cast  
Steel Face, Locust Plug, Hick-  
ory Handles.....each, \$12.00

COAL SCREEN.



Fig. 2079.

Size.	Mesh.	Each.
33 ins.	1 to 2 ins.	\$12.00
33 "	7/8 "	10.00
24 "	7/8 "	7.00

With standard and leg  
extra.....each, \$2.00 net

BELGIAN STONE PAVING HAMMER.



Fig. 2080.

Cast Steel Face and Pein.....each, \$3.00

COBBLE STONE PAVING HAMMER.



Fig. 2081.

Cast Steel Blade and Butt.....each, \$3.00

CHURN DRILL.



Fig. 2082.

Cast Steel, all sizes.....per lb., \$0.30

SPOON OR SCRAPER.



Fig. 2083.

Copper Pointed, 9 to 10 feet long.....each, \$2.00

PLUG AND FEATHERS.



Fig. 2084.

Steel..... per lb., \$0.20

PUDDLING BAR.



Fig. 2085.

Solid Cast Steel Head.....per lb., \$0.15

DRILL.



Fig. 2086.

Solid Steel.....per lb., \$0.20

STONE SLEDGES, STRIKING HAMMERS, DRILLING HAMMERS, BUSH HAMMERS, ETC.

See page 195 for cuts and prices.

PINCH POINT CROW BAR.



Fig. 2087.

Solid Cast Steel, 12 to 30 lbs.....per lb., \$0.12

RAILROAD LINING BAR.



Fig. 2089.

Solid Cast Steel, 20 to 24 lbs.....per lb., \$0.15

CLAW BAR.



Fig. 2091.

Solid Cast Steel, 28 to 30 lbs.....per lb., \$0.18

WEDGE POINT CROW BAR.



Fig. 2088.

Solid Cast Steel, 12 to 30 lbs.....per lb., \$0.12

RAILROAD TAMPING BAR.

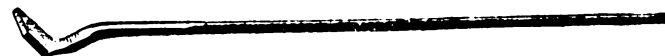


Fig. 2090.

Solid Cast Steel, 10 to 12 lbs.....per lb., \$0.18

CLAW BAR WITH HEEL.



Fig. 2092.

Solid Cast Steel, 28 to 30 lbs.....per lb., \$0.18

## RAILROAD TRACK TOOLS.

TRACK PUNCHES.  
Round Point. Square Point.

Fig. 2093.

Solid Cast Steel.  
Per lb. ....\$0.55

Fig. 2094.

Solid Cast Steel.  
Per lb. ....\$0.55

## RAIL TONGS.

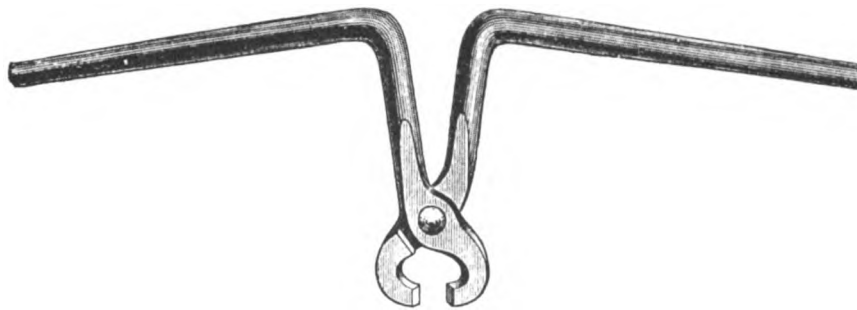


Fig. 2095.

Solid Cast Steel.....per lb., \$0.30  
Wrought Iron steel jaws....." .25TRACK  
CHISEL.

Fig. 2096.

Highest grade  
tool steel.  
Per lb. \$0.50TRACK  
MAUL.

Fig. 2097.

Solid Cast Steel,  
Per lb. ....\$0.30

## TRACK WRENCH.



Fig. 2098.

Solid Cast Steel (all sizes).....per lb., \$0.25  
When ordering state size of nut on which wrench is to be used.

## RAIL FORK.



Fig. 2099.

Solid Cast Steel.....per lb., \$0.30  
Regular weight about 14 pounds.

## PROUT'S SPIKE PULLER.



Fig. 2100.

This new and improved track tool is light, strong and simple in construction, convenient and effective in operation, possessing great leverage power, and is an absolutely perfect and economical device for pulling spikes without bending or otherwise injuring them. It enables the operator to stand inside the track, so that the tool can be used in yards, cuts, tunnels, on the outside of bridges, trestles, and at stations where there are platforms, and in fact anywhere spikes can be driven, a result unattainable by the ordinary claw bar or by any other track tool ever invented.

Each .....\$7.00

## TRACK LEVEL.



Fig. 2101.

This is a wooden bar, the ends shod with steel plates, and a spirit glass in the middle protected by a leather handle. On the right hand end is a sliding scale and stop thumb screw to set the level by to obtain any desired elevation of rail.

Each .....\$8.00

## TRACK LEVEL.



Fig. 2102.

Wood bar, iron shod, with spirit glass in the center, protected by handle. One end is cut in steps to be used to obtain any desired elevation of rail.

Each .....\$3.50

## HUNTINGTON TRACK GAUGE.

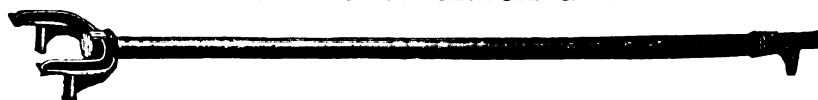


Fig. 2103.

This gauge is light, strong and accurate. The stem of the gauge is made of wrought iron gas pipe, to which are attached by taper threads malleable iron heads securely fastened with pins riveted up tight. The above cut shows the principle of the gauge. The two lugs at forked end having a bearing on the flange edge of the rail, secure at once a true right angle gauge, obviating the frequent serious inaccuracies occasioned by the use of ordinary gauges. Any length.

Each .....\$3.00

## HUNTINGTON ADJUSTABLE TRACK GAUGE.

Adjustable to all gauges of track ..... Each, \$5.00

# TRACK DRILLS AND RAIL BENDERS.

## IXL TRACK DRILL.

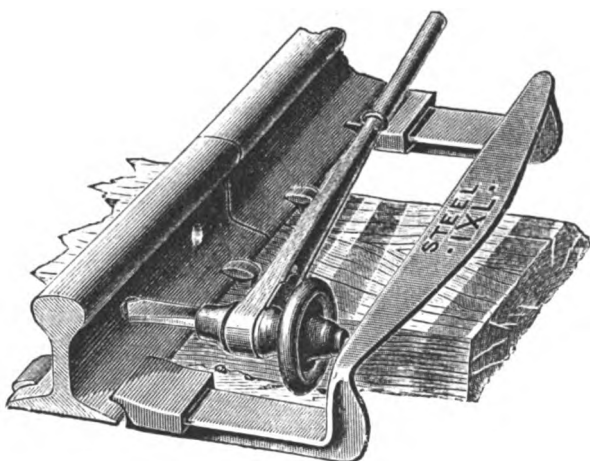


Fig. 2104.

This tool is strong, light and easily adjusted. The clamp is steel. It drills the holes for a joint without drawing the spikes or moving the clamp. The ratchet may be used wherever a ratchet is needed, it being a good ratchet drill with hand feed wheel.

Complete, with 2 drills.....each, \$10.00

## VICTOR TRACK DRILL.

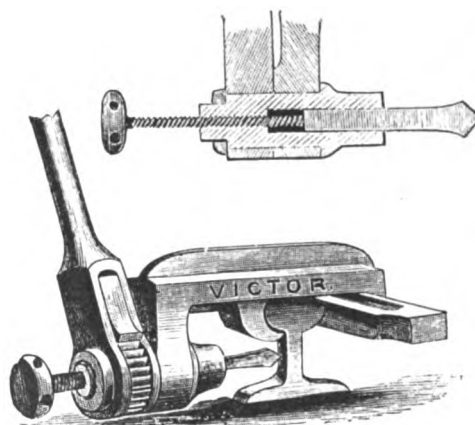


Fig. 2105.

This is a very convenient tool for drilling holes in rails. Holes can be drilled and fish plates put on without drawing a spike. Although cheap in price it is a first-class tool in every respect.

Weight, 23 pounds.

Complete, with 2 drills.....each, \$8.50

## BELAND TRACK DRILL.

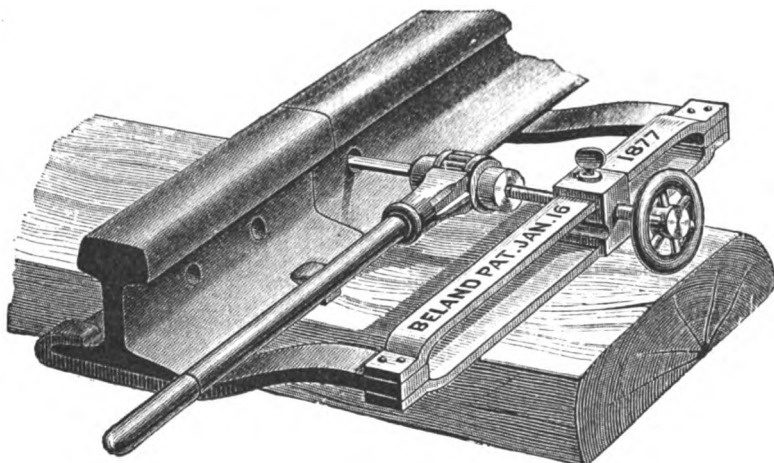


Fig. 2106.

This drill is light and convenient to handle and work. Clamp is solid, and of wrought iron. Ratchet is cast steel. It does not interfere with passing trains, and drills a loose rail as well as one spiked down.

Complete, with 2 drills.....each, \$10.00

## UNDERWOOD TRACK DRILL.

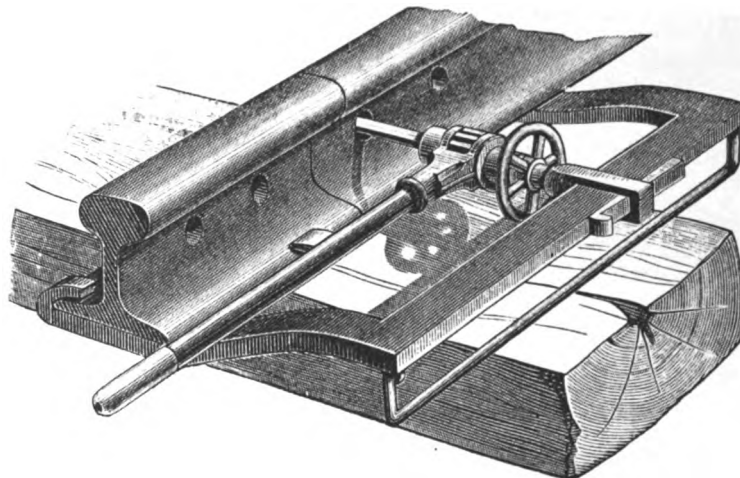


Fig. 2107.

The manner of attaching this Drill Clamp to the rail is simple, and affords absolute protection against accident to passing trains or the drill itself while in working position.

Complete, with 2 drills.....each, \$10.00

## SCREW RAIL BENDER OR "JIM CROW."

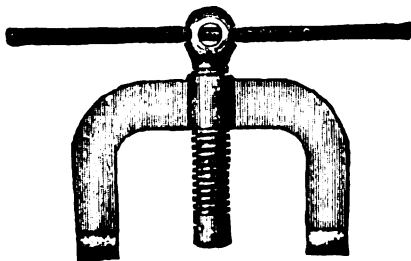


Fig. 2108.

## WILLISTON'S PATENT RAIL BENDER.

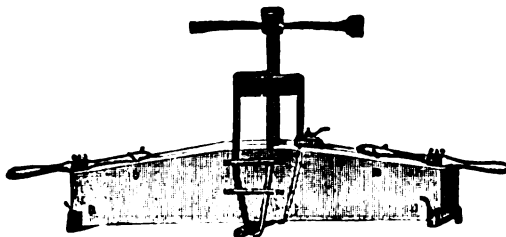


Fig. 2109.

## DOUBLE ACTING RAIL BENDER.



Fig. 2110.

## Prices, Screw Rail Benders, Fig. 2108.

Made of best wrought iron, with machine cut square thread screw.

No.	Weight, Each.	Width of Span.	Diameter of Screw.	For Iron Rails.	For Steel Rails.	Each.	No.	Weight, Each.	Width of Span.	Diameter of Screw.	For Iron Rails.	For Steel Rails.	Each.
1	60 lbs.	16 ins.	2 ins.	30 lbs.	20 lbs.	\$21.00	3 1/2	155 lbs.	24 ins.	2 3/8 ins.	75 lbs.	90 "	\$50.00
2	95 "	20 "	2 1/4 "	50 "	45 "	29.00	4	180 "	24 "	2 3/4 "	90 "	90 "	59.00
3	140 "	24 "	2 1/2 "	90 "	65 "	42.00							

A strong Lever Bar sent with each Rail Bender.

## Price, Williston's Rail Bender, Fig. 2109. For curving and straightening rails.

Each .....\$50.00

## Price, Double Acting Rail Bender, Fig. 2110.

Each .....\$40.00

## RAIL BENDERS AND CAR REPLACERS.

## LITTLE GIANT RAIL BENDER.

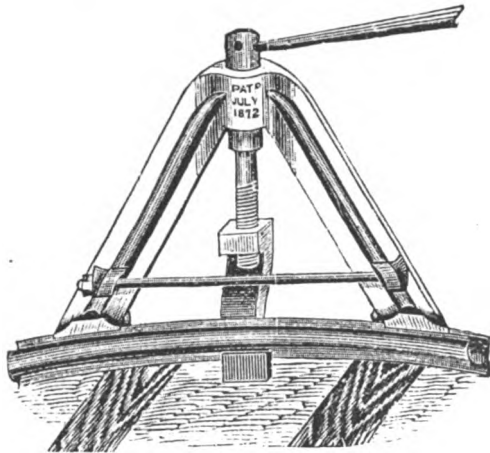


Fig. 2111.

This is a most useful tool in the construction of railways, for bending and curving rails for alignment in track. It is very strong and reliable, and any ordinary man will bend or straighten the heaviest steel or iron rail. Two men handle the tool with ease.

Each .....\$25.00

## HYDRAULIC RAIL BENDER.

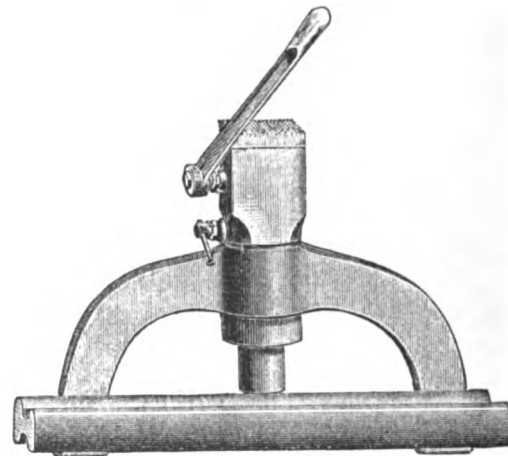


Fig. 2112.

This Bender can be worked in any position.

No. A, for 45 lb. steel rails, span 20 inches. weight 100 lbs...	each, \$59.00
" B, " 65 " " " 24 " 150 " .... "	76.00
" C, " 90 " " " 24 " 200 " .... "	93.00

This Bender made to suit any style of street rail upon receipt of drawing of section of the rail.

## EMERSON'S RAIL BENDER.



Fig. 2113.

This Rail Bender measures about three by four feet in extreme dimensions. It is operated by a loosely fitting wooden lever eight feet long. The power of the machine is abundant to bend any rail laterally by the weight of one man applied to end of lever. In forming very sharp curves, as for turn tables, street curves and sidings, it is especially valuable, as well as for curving steel rails which are liable to be broken by the hammer.

A small block of iron is furnished with each machine to be placed between rail and end of ram. The ram is attached to bar by a screw sleeve, which enables the operator to set ram close to rail before using lever.

No. 2, weight, 235 lbs., for 45 to 65 lb. rails.....	each, \$118.00
" 3, " 300 " 65 to 90 " .....	" 143.00

## IMPROVED RAIL BENDER.

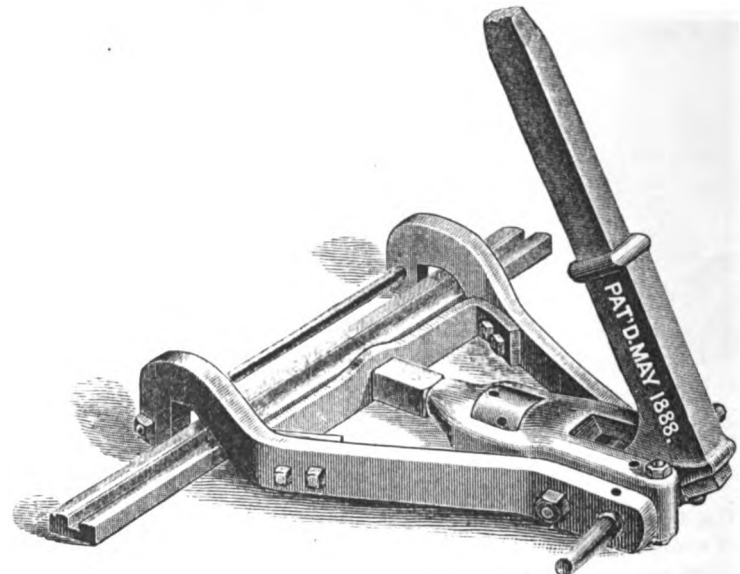


Fig. 2114.

This machine will bend or straighten rails or shafts of any style or size. It is especially designed for bending street rails of all kinds. The lever is eight feet in length, and fits into a cast iron socket. One of the great advantages of the machine is the ease with which it can be moved about upon the work. Two men can carry it anywhere.

The hooks which fit over the rail are made of different shapes according to the style of rail to be bent. When ordering send a small section of rail or a correct drawing of end of rail.

No. 1, weight, 240 lbs., will bend anything.....each, \$125.00

## SHOTWELL'S PATENT STEEL CAR REPLACER.

Will suit any gauge.

When ordering Car Replacer give height of rail and greatest diameter of head.

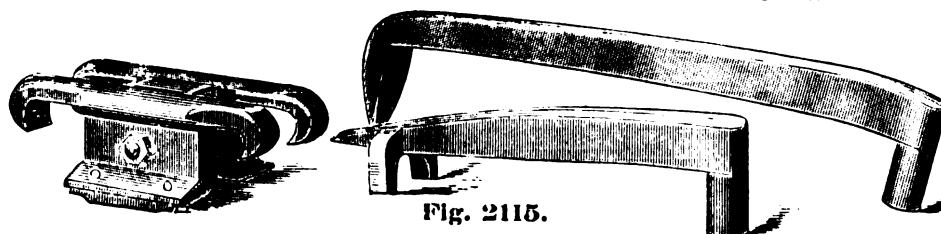


Fig. 2115.

The Replacer consists of a firm frame made of steel, on wrought iron base plate, and two forged bessemer steel bars of different lengths, on which the wheel is conducted to the rail; one set of the above required for each rail. The frame or shoe is provided with hooks which, when adjusted, pass over and grip the head of the rails, and thus is held snugly and securely in place.

The shoe is so constructed as to form a socket, when hooked over rail, which receives the pivot ends of the bars and holds them in place.

This Replacer is easily and quickly adjusted to meet the wheels in all positions. For simplicity, durability and compactness it cannot be excelled.

Prices, per Set of Six Pieces.		
No. 1, for heaviest engines and cars. per set, \$40.00	No. 2, for ordinary engines and cars. per set, \$38.00	No. 3, for light engines and cars. per set, \$35.00

# CAR REPLACERS, CAR PUSHERS, TRACK JACKS, ETC.

## PULLMAN'S CAR REPLACER.

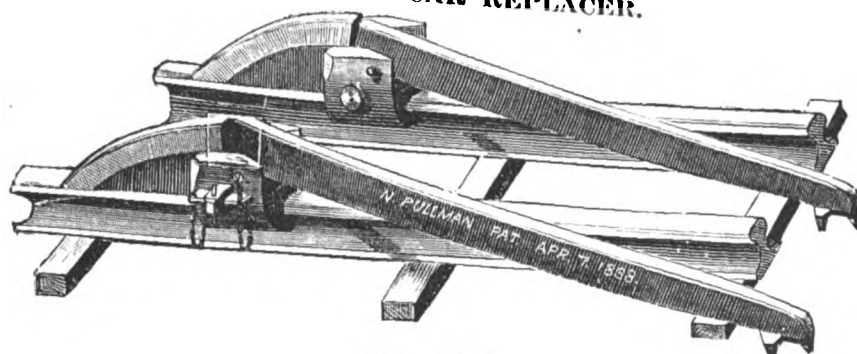


Fig. 2116.

This Replacer is made of the best cast steel. It is easily adjusted to the rail, and is taken apart by simply removing the two pins held by two small chains.

Complete.....per pair, \$50.00

## NEWCOMB'S CAR REPLACER.

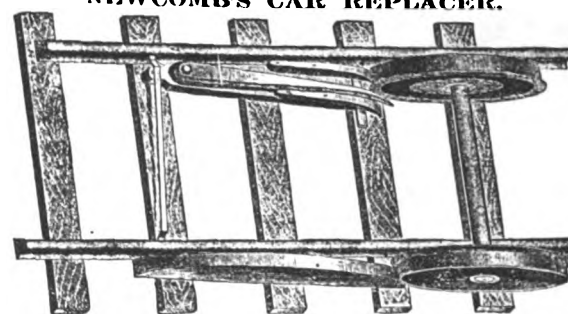


Fig. 2117.

This Replacer is made of wood and wrought iron. The frog-like part between the rails is held in place at the forward end by spurs cutting into the cross ties, and at the other end by an adjustable bar.

Per pair.....\$35.00

## CHICAGO CAR MOVER.

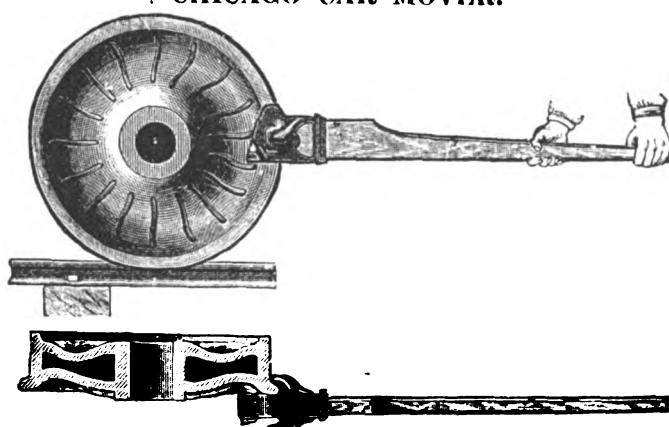


Fig. 2118.

This Car Mover grasps wheel by a firm bite on flange directly opposite the axle, thus giving it the most powerful leverage possible. It readily adjusts itself by its own weight revolving backward on the flange, thus being a continued propelling force when car is in motion.

Each.....\$6.00

## GIANT CAR PUSHER.

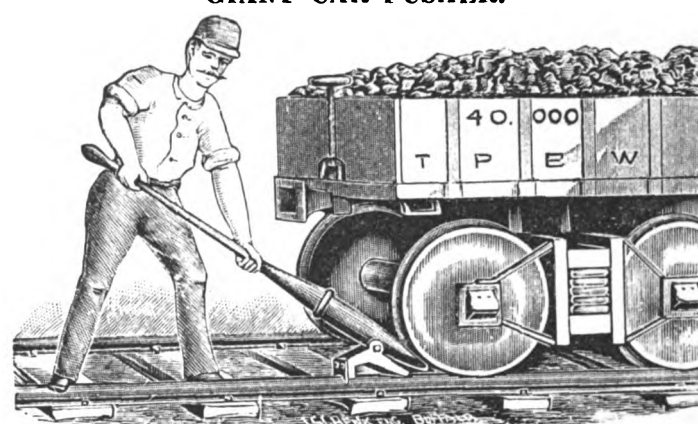


Fig. 2119.

This tool weighs only 24 pounds. With it one man can increase his power five times, and move twenty tons with ease. It has immenso leverage power. Ice or grease on the rail does not hinder its operation.

Each.....\$6.00

## WEBBER TRACK JACK.



Fig. 2120.

No shoveling is required under rail to place this jack in position; the clamp being automatic, hooks under head or flange of rail without the aid of operator. The ball nut rests loosely in socket on top of frame, and adjusts itself so that the lift is direct no matter how uneven the ground may be on which jack rests.

Each.....\$10.00

## RAILROAD SWITCH AND WRECKING ROPE, With Hooks and Links Attached.



Fig. 2121.

Diameter in Inches.	Circumference in Inches.	Length in Feet.	Price, Each.	Diameter in Inches.	Circumference in Inches.	Length in Feet.	Price, Each.
7/8	23 1/4	20	\$13.75	1 1/8	31 1/2	20	\$17.00
7/8	23 1/4	25	15.00	1 1/8	31 1/2	25	19.00
7/8	23 1/4	30	16.25	1 1/8	31 1/2	30	21.00
1	3	20	14.50	1 1/4	33 1/4	20	18.50
1	3	25	16.25	1 1/4	33 1/4	25	21.00
1	3	30	18.00	1 1/4	33 1/4	30	23.50

Other sizes and lengths made to order.

## HOOKS AND LINKS FOR SWITCH ROPES.

To order. Prices on application.

## IMPROVED TRACK JACK.

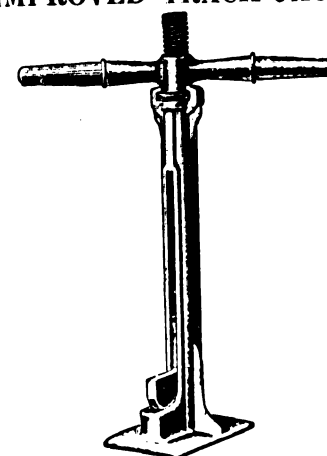


Fig. 2122.

The above cut represents the New Improved Screw Track Jack. The nut and levers are cast in one piece; this piece and the frame are malleable iron, and the screw wrought iron with the foot forged on.

Diameter of screw.. 1 1/2 inches.

Rise of screw..... 15 "

Weight, complete.. 35 lbs.

Each.....\$6.00



## TRACK AND WEIGHING JACKS.

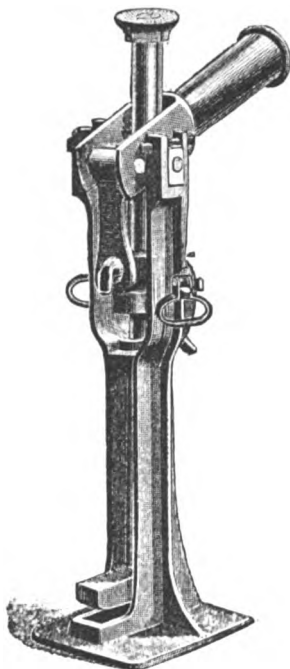
JENNE TRACK JACK,  
Nos. 1 & 2.

Fig. 2123.

The pins are steel; the frame and lever socket are best air furnace malleable iron; bar is wrought iron.

No. 1, Height, 29 inches. Lift, 12 inches. Bar  $1\frac{1}{2}$  inches diam. Weight, 62 lbs. Capacity, 5 tons..... each, \$20.00

No. 2, Height, 33 inches. Lift, 15 inches. Bar,  $1\frac{3}{4}$  inches diam. Weight, 95 lbs. Capacity, 10 tons..... each, \$24.00

In the Jenne Jack there are no cogs to wear; no small parts to lose. It can be moved up or down full length instantly, or raised or lowered the smallest fraction of an inch if desired. Impossible to slip under a load.

SCREW TRACK JACK.

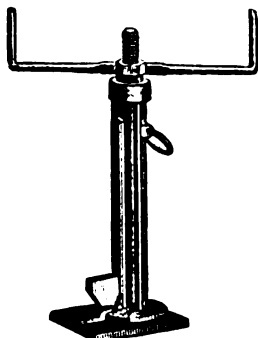


Fig. 2126.

Wrought iron screw, handle and base. Diameter of screw,  $1\frac{1}{2}$  ins. Length of screw, 25 ins.

Each..... \$4.00

Prices, Standard Track Jacks,  
Fig. 2128.

WROUGHT IRON, WARRANTED.

This Track Jack is made of wrought iron except the nut, which is malleable, and its flanges work on the upright frame allowing the screw to act freely.

Diameter of screw,  $1\frac{1}{2}$  inches. Length of screw, 18 inches. Weight, 37 lbs.

Each..... \$5.00

STANFORD TRACK JACK.

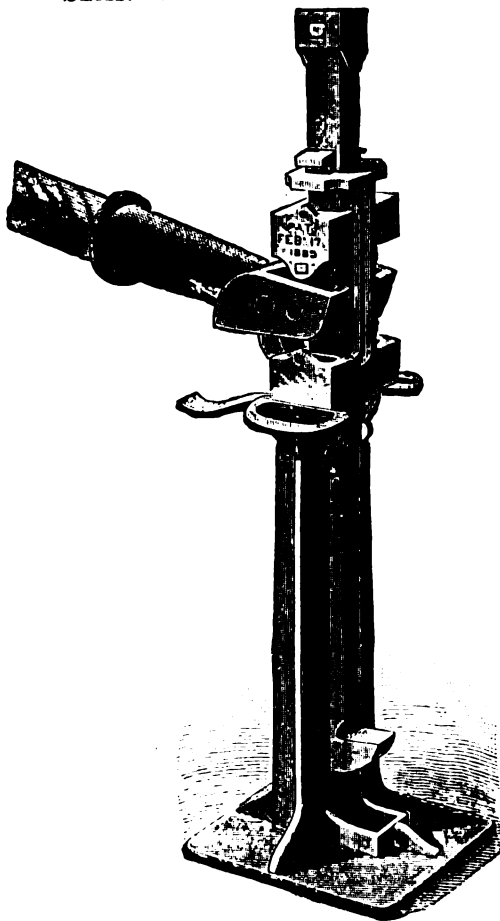


Fig. 2124.

This Lifting Jack is designed specially for railroad track raising, and will be found admirably adapted to that work. A perfectly plain lifting bar is used which, when loaded, can be raised the smallest distance, or dropped the entire length without the use of an extra part. The steel friction clutch for holding the lifting bar is a novel device, perfect in its adaptation and sure in operation.

No. 1, Weight, 67 lbs., 13 inch lift, each, \$22.50  
" 2, " 100 " 15 $\frac{1}{2}$  " " 24.00

STANDARD TRACK JACK.

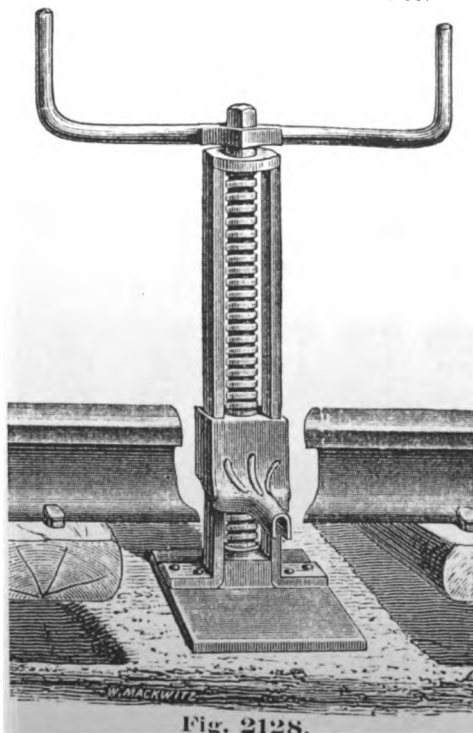


Fig. 2128.

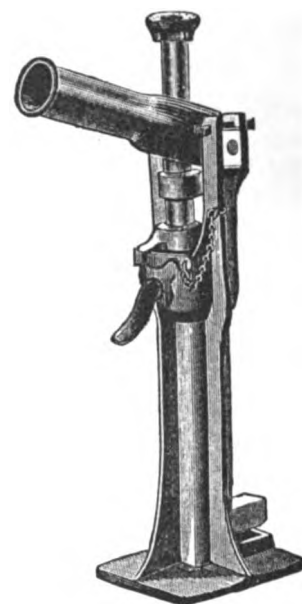
JENNE TRACK JACK,  
No. 0.

Fig. 2125.

The pins are steel; frame and lever are wrought iron; bar is wrought iron, used for light work on single track.

Height, 26 inches. Lift, 10 inches. Bar,  $1\frac{1}{4}$  inches diameter. Weight, 42 lbs.

Each..... \$16.00

CHASE'S WEIGHING JACK.

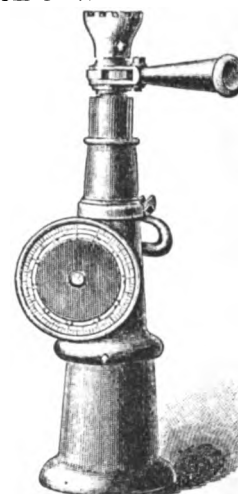


Fig. 2127.

This is a superior jack combined with an absolutely accurate weighing scale for weighing railroad cars, locomotives, heavy machinery, loaded wagons, etc. Will weigh anything from 100 lbs. upwards.

Their capacity is measured by the number used. Four ten ton jacks will weigh 40 tons, or ten will weigh 100 tons.

The Jacks are placed under the load to be weighed, screwed up until the load is free, when the graduated dial shows the weight each is supporting. No trouble from frost, snow, ice or water.

Nos.	Capacity.	Height.	Rise of Screw.	Size of Screw.	Weight.	Each.
1	1500 lbs.	20 ins.	7 ins.	1 in.	35 lbs.	\$30.00
4	4 tons.	25 "	8 "	$1\frac{1}{2}$ "	80 "	50.00
6	6 "	20 "	9 "	$1\frac{3}{4}$ "	100 "	60.00
10	10 "	33 "	13 "	$2\frac{1}{8}$ "	125 "	75.00

## LEVER AND COMPOUND LEVER JACKS.

Nos. 5, 6 and 7.

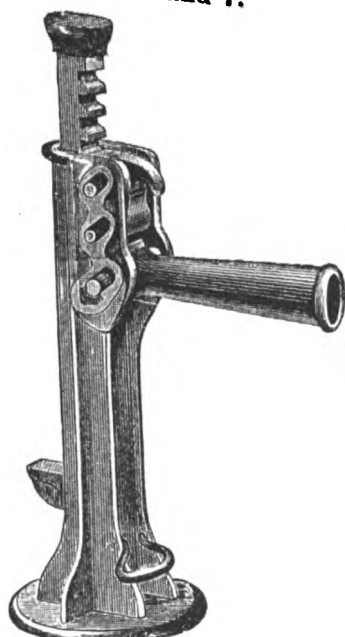


Fig. 2129.

Nos. 1, 2 and 4.

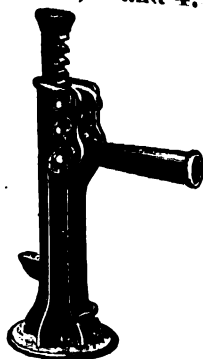


Fig. 2130.

In these Jacks the frame and pawl are made of malleable iron. The lever is wrought iron and case hardened. The bar is wrought iron and case hardened. The boxes are tempered steel, and the pins are steel. All the wearing surfaces are hardened steel.

- No. 1 is for portable engines.
- " 2 " narrow gauge track.
- " 3 " truck boxes.
- " 4 " R. R. track work.
- " 5 " car use.
- " 6 " wrecking and heavy work.
- " 7 " wrecking and heavy work.
- " 8 " locomotive and wrecking work.
- " 9 " heavy track and yard work.

No. 3.



Fig. 2131.

Nos. 8 and 9.

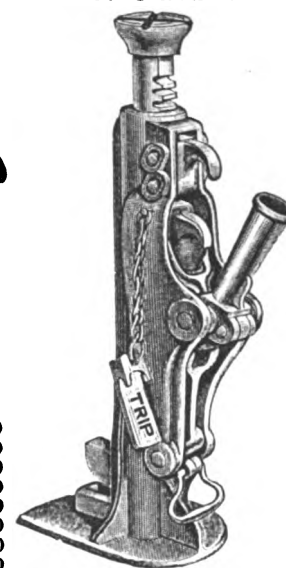


Fig. 2132.

Nos.	Size of Bar.	Height when Down.	Rise of Bar.	Weight, Pounds.	Capacity, Tons.	Each.
1	1 1/4 ins. square	16 inches	9 inches	25	2	\$10.00
2	1 1/4 "	19 "	11 "	25	2	10.00
3	1 1/2 "	12 "	4 "	28	4	10.00
4	1 1/2 "	23 "	14 "	42	4	16.00
5	1 3/4 "	28 3/4 "	15 "	75	8	23.00
6	2 "	28 "	15 "	95	15	26.00
7	2 "	37 1/2 "	25 "	118	15	30.00
8	2 ins. round	29 "	14 "	90	12	35.00
9	2 "	29 "	14 "	96	12	35.00

## DOUBLE MOVEMENT RATCHET SCREW JACKS.

No. 18.

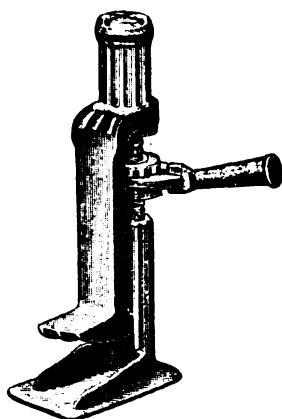


Fig. 2133.

Nos. 12, 13, 14, 16 & 17.

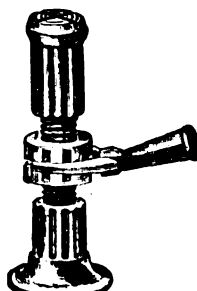


Fig. 2134.

The smaller sizes specially adapted for general car truck box work. The larger sizes for any kind of car or locomotive work, as well as house movers' and builders' use. All of this style of Jacks are highly appreciated, owing to their working twice as fast as the common screw jacks, and requiring no more power.

Nos. 19, 20, 21, 22 & 23.

Nos.	Diam. of Screw.	Height when Down.	Rise of Screw.	Weight, Pounds.	Capacity, Tons.	Each.
12	2 ins.	10 ins.	4 ins.	20	8	\$10.00
13	2 "	12 "	6 "	23	8	10.00
14	2 "	13 "	7 "	25	8	10.00
15	2 "	13 "	7 "	20	8	10.00
16	2 "	16 "	10 "	36	8	17.00
17	2 "	20 "	13 "	43	8	18.00
18	2 "	19 "	8 "	45	8	20.00
19	2 1/2 "	16 "	9 "	47	30	25.00
20	2 1/2 "	20 "	12 "	55	30	30.00
21	2 1/2 "	24 "	16 "	65	30	35.00
22	3 "	27 "	18 "	125	50	45.00
23	3 "	33 "	24 "	145	50	50.00

No. 15.

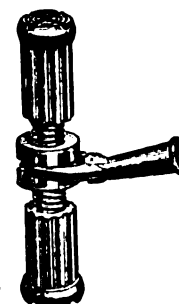


Fig. 2135.

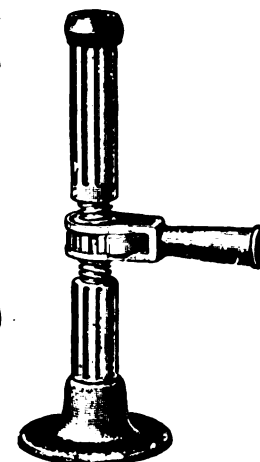


Fig. 2136.

## RAPID MOVING RATCHET SCREW JACKS.

Nos. 25 and 27.



Fig. 2137.

- No. 24 is for narrow gauge locomotive work.
- " 25 " general locomotive work.
- " 26 " heavy bridge work.
- " 27 " raising passenger coaches.

No. 24.



Fig. 2138.

This Jack is called rapid moving because the screw, when the load is off, can be raised immediately to any desired point, and when up can be as quickly let down, thus saving the tedious operation of turning the screw up and down as in all other screw jacks.

The two segmental nuts are made of gun metal, and are supported on steel pins, moving in angular slots so as to allow them to move in and out of gear. And in addition when in gear the base of the nuts rests on the bottom of the mortise.

To raise the screw to any desired height for the work, it is only necessary to lift it by taking hold of the lever; to lower it, take hold of one of the handles with the left hand, and inclining the Jack to an angle of about 45 degrees, with the other hand holding the lever, let the screw down.

The frame, lever, ratchet and cap are made of malleable iron. The pawl is cast steel. The screw is wrought iron.

Nos.	Diameter of Screw.	Height when Down.	Rise of Screw.	Weight, Pounds.	Capacity, Tons.	Each.
24	2 inches	22 inches	11 inches	48	8	\$35.00
25	2 1/2 "	27 "	15 "	90	39	50.00
26	3 "	29 "	14 "	150	50	90.00
27	2 1/2 "	36 1/4 "	24 "	137	25	65.00

No. 26.

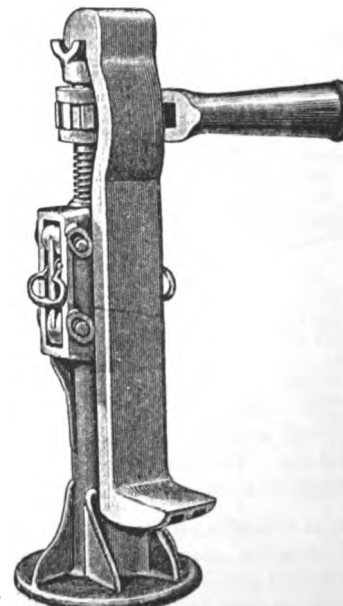


Fig. 2139.

## LOCOMOTIVE AND RAILROAD JACK SCREWS.



Fig. 2140.



Fig. 2141.



Fig. 2142.



Fig. 2143.

## Prices, Bell Base Locomotive Jacks, Figs. 2140 to 2143.

Barrels are of best quality cast iron. Screws are wrought iron machine cut threads.

Diam. of Screw.	Height of Stand.	Height of Over All.	Each.	Diam. of Screw.	Height of Stand.	Height of Over All.	Each.	Diam. of Screw.	Height of Stand.	Height of Over All.	Each.	Diam. of Screw.	Height of Stand.	Height of Over All.	Each.
1 1/4 ins.	6 ins.	9 ins.	\$3.10	2 ins.	8 ins.	12 1/2 ins.	\$6.00	2 1/4 ins.	21 ins.	29 ins.	\$15.75	2 1/2 ins.	21 ins.	29 ins.	\$15.75
1 1/2 "	8 "	11 "	3.40	2 "	10 "	14 1/2 "	6.75	2 3/4 "	21 "	29 "	8.00	2 3/4 "	21 "	29 "	8.00
1 3/4 "	6 "	10 "	3.75	2 "	12 "	16 1/2 "	7.50	2 3/4 "	21 "	29 "	8.75	2 3/4 "	21 "	29 "	8.75
1 3/4 "	8 "	12 "	4.25	2 "	14 "	18 1/2 "	8.25	2 3/4 "	21 "	29 "	9.75	2 3/4 "	21 "	29 "	9.75
1 3/4 "	10 "	14 "	4.75	2 "	16 "	20 1/2 "	9.25	2 3/4 "	21 "	29 "	10.75	2 3/4 "	21 "	29 "	10.75
1 3/4 "	12 "	16 "	5.25	2 "	18 "	22 1/2 "	10.25	2 3/4 "	21 "	29 "	12.00	2 3/4 "	21 "	29 "	12.00
1 3/4 "	14 "	18 "	6.00	2 "	20 "	24 1/2 "	11.50	2 3/4 "	21 "	29 "	13.25	2 3/4 "	21 "	29 "	13.25
1 3/4 "	16 "	20 "	6.75	2 "	22 "	26 1/2 "	12.50	2 3/4 "	21 "	29 "	14.50	2 3/4 "	21 "	29 "	14.50
1 3/4 "	6 "	10 "	4.50	2 1/4 "	8 "	13 "	7.50	2 1/2 "	20 "	26 "	15.75	2 1/2 "	20 "	26 "	15.75
1 3/4 "	8 "	12 "	5.00	2 1/4 "	10 "	15 "	8.25	2 1/2 "	21 "	28 "	17.00	2 1/2 "	21 "	28 "	17.00
1 3/4 "	10 "	14 "	5.75	2 1/4 "	12 "	17 "	9.00	2 1/2 "	22 "	30 "	18.25	2 1/2 "	22 "	30 "	18.25
1 3/4 "	12 "	16 "	6.25	2 1/4 "	14 "	19 "	10.00	2 1/2 "	23 "	31 "	22.00	2 1/2 "	23 "	31 "	22.00
1 3/4 "	14 "	18 "	6.75	2 1/4 "	16 "	21 "	11.00	2 1/2 "	24 "	32 "	26.00	2 1/2 "	24 "	32 "	26.00
1 3/4 "	16 "	20 "	7.50	2 1/4 "	18 "	23 "	12.00	3 "	18 "	21 "	22.00	3 "	18 "	21 "	22.00
1 3/4 "	18 "	22 "	8.50	2 1/4 "	20 "	25 "	13.25	3 "	20 "	26 "	23.25	3 "	20 "	26 "	23.25
2 "	6 "	10 1/2 "	5.25	2 1/4 "	22 "	27 "	14.50	3 "	21 "	30 "	25.75	3 "	21 "	30 "	25.75

## RAPID MOVING TRAVERSING SCREW JACK.

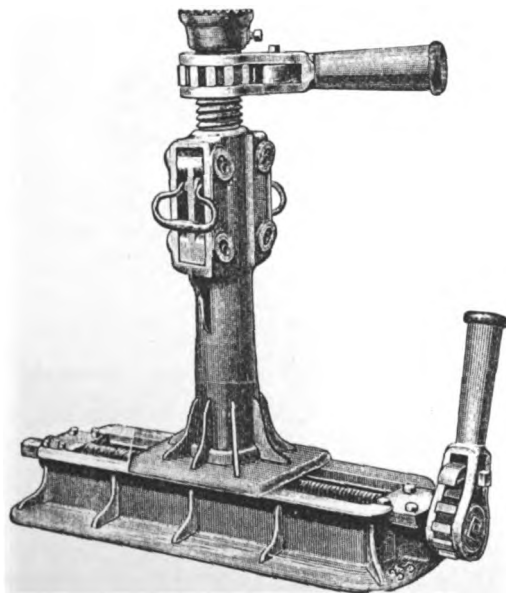


Fig. 2146.

This Jack is made from tasty and neat patterns, designed with special attention to strength and durability. The materials used are malleable iron, wrought iron, steel and gun metal.

Height of Jack when down.....	27 inches.
Safe elevation.....	10 "
Horizontal movement.....	13 "
Weight of Jack.....	150 lbs.
Capacity.....	25 tons.
Per pair.....	\$150.00

## RATCHET CARRYING JACK.

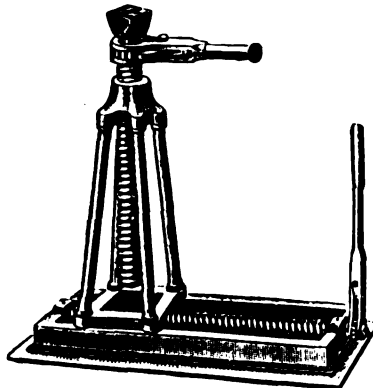


Fig. 2147.

Made with wrought iron screws, brass nuts, steel base, and polished steel ratchet, pawls and lifting screw handle.

Diameter of Screw.	Height over all.	Each.
2 1/4 ins.	28 ins.	\$140.00

## TRAVERSING BASE.

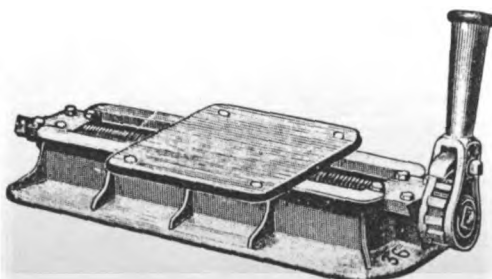


Fig. 2149.

## TRIPOD RATCHET JACK.

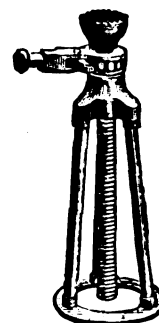


Fig. 2144.

## Prices, Tripod Ratchet Jacks, Fig. 2144.

Wrought iron screw and base, brass nut, ratchet, pawls and handle finely polished steel.

Diam. of Screw.	Height of Over All.	Each.	Diam. of Screw.	Height of Over All.	Each.	Diam. of Screw.	Height of Over All.	Each.	Diam. of Screw.	Height of Over All.	Each.
2 1/4 ins.	18 ins.	\$58.00	2 1/2 ins.	21 ins.	\$69.00	2 3/4 ins.	30 ins.	\$86.00	3 1/4 ins.	30 ins.	\$93.00
2 1/4 "	21 "	62.00	2 1/2 "	30 "	74.00	2 3/4 "	36 "	92.00	3 "	36 "	100.00
2 1/2 "	18 "	61.00	2 3/4 "	21 "	80.00	3 "	21 "	86.00			

## Prices, Bell Base Ratchet Jacks, Fig. 2145.

Cast iron barrel, wrought iron screw, polished steel handle, ratchet and pawls.

Diam. of Screw.	Height of Over All.	Each.	Diam. of Screw.	Height of Over All.	Each.	Diam. of Screw.	Height of Over All.	Each.	Diam. of Screw.	Height of Over All.	Each.
2 ins.	18 ins.	\$25.25	2 1/4 ins.	22 ins.	\$28.50	2 1/2 ins.	24 ins.	\$31.75	2 3/4 ins.	24 ins.	\$45.00
2 "	20 "	26.25	2 1/4 "	21 "	29.50	2 1/2 "	26 "	33.00	2 3/4 "	28 "	48.00
2 "	22 "	27.25	2 1/4 "	26 "	30.50	2 1/2 "	28 "	31.25	2 3/4 "	30 "	50.00
2 "	24 "	28.25	2 1/4 "	28 "	31.75	2 1/2 "	30 "	35.50	2 3/4 "	36 "	58.00
2 "	26 "	29.25	2 1/4 "	30 "	33.00	2 1/2 "	31 "	40.00	3 "	20 "	43.00
2 "	28 "	30.25	2 1/2 "	18 "	28.00	2 1/2 "	36 "	42.50	3 "	21 "	47.00
2 "	30 "	31.25	2 1/2 "	20 "	29.25	2 1/2 "	38 "	45.00	3 "	28 "	50.00
2 1/4 "	20 "	27.50	2 1/2 "	22 "	30.50	2 3/4 "	20 "	41.00	3 "	36 "	61.00

## DOUBLE MOVEMENT TRAVERSING SCREW JACK.

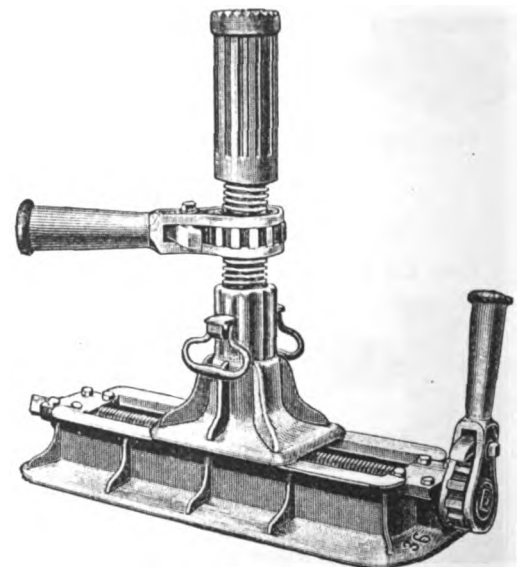


Fig. 2148.

Made of same material and with same care as Fig. 2146.  
 Height of Jack when down.....23 inches.  
 Safe elevation.....10 "  
 Horizontal movement.....13 "  
 Weight of Jack.....143 lbs.  
 Capacity.....30 tons.  
 Per pair.....\$125.00

## Price, Traversing Base, Fig. 2149.

Same base as with Jacks Figs. 2146 and 2148. A sliding plate is put on it so that it may be used with any jack.  
 Horizontal movement, 13 inches. Weight, 90 lbs.  
 Each.....\$10.00

# LIFTING JACKS, COTTON SCREWS, CLAW JACKS, ETC.

## MOSHER'S IMPROVED LIFTING JACKS.

No. 6.

No. 6, Sectional Cut.

Nos. 1, 2, 3, 4 & 5.

No. 0.

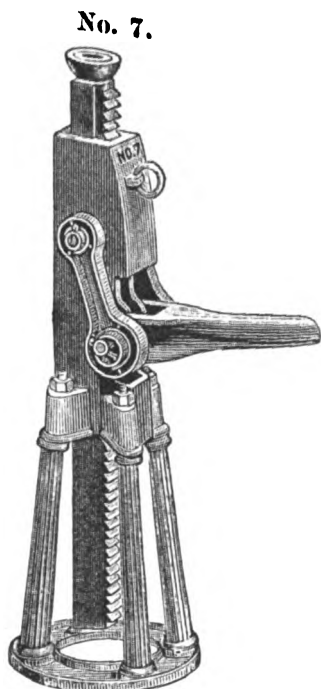


Fig. 2150.

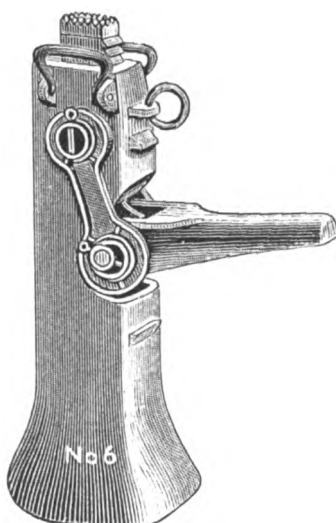


Fig. 2151.

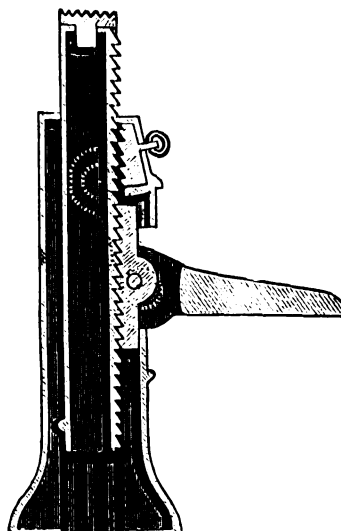


Fig. 2152.

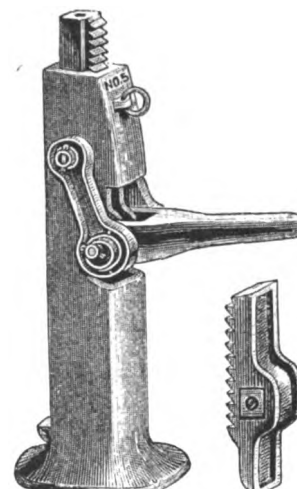


Fig. 2153.

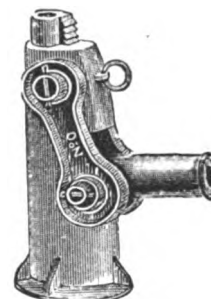


Fig. 2154.

These Jacks are made from the finest air furnace malleable iron, and are therefore very strong and light. Load can be instantly dropped the entire length of the bar when desired.

No. 0 weighs	19 lbs., designed for car inspectors' use, has socket lever, so that the steel bar or hook they use will answer as extension lever.....	each, \$6.00
" 1 "	25 lbs.; height, 11 $\frac{1}{2}$ inches; used as a journal or oil box jack, will raise 6 inches.....	" 12.00
" 2 "	50 lbs.; height, 20 inches; used as a heavy track jack, raises 10 inches, $\frac{3}{4}$ in. at a stroke, with adjusting key so as to hold at any required height between notches.....	" 15.00
" 3 "	80 lbs.; height, 26 inches; for light cars and bridge work, a good 10 ton jack, raises 15 $\frac{1}{2}$ inches, 1 inch notches.....	" 22.50
" 4 "	72 lbs.; height, 20 inches; for all heavy work on narrow gauge railroads; capacity, 15 tons; raises 12 inches, $\frac{3}{4}$ inch notches.....	" 20.00
" 4 $\frac{1}{2}$ "	Same as above, with ground lift.....	" 25.00
" 5 "	90 lbs.; height, 26 inches; for heavy car and locomotive work, a good 15 ton jack; raises 15 $\frac{1}{2}$ inches, $\frac{1}{2}$ inch notches.....	" 30.00
" 6 "	120 lbs.; height, 24 inches; for and adapted to locomotive work, a good 18 ton jack; raises 13 $\frac{1}{2}$ inches, $\frac{1}{2}$ inch notches.....	" 36.00
" 7 "	118 lbs.; height, 34 inches; for car, coach and sleeper work, a good 15 ton jack; raises 23 inches, $\frac{1}{2}$ inch at a stroke.....	" 38.00
" 8 "	34 lbs.; height, 20 inches; for track work; raises 10 inches, $\frac{1}{4}$ inch at a stroke.....	" 10.00

### FLAT BASE CAR BOX JACK.



Fig. 2155.

### BELL BASE CAR BOX JACK.

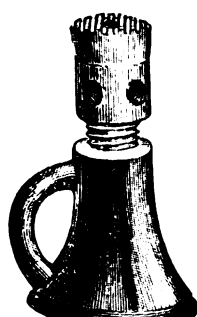


Fig. 2156.

#### Prices, Flat Base Car Box Jacks.

No.	Height over all.	Diam. of Screw.	Each.
1	9 inches	2 inches	\$1.25
2	14 "	2 "	5.75
3	15 "	2 $\frac{1}{2}$ "	9.00

#### Prices, Bell Base Car Box Jacks.

No.	Height over all.	Diam. of Screw.	Each.
11	10 inches	2 inches	\$5.00
12	12 "	2 "	5.50
13	14 "	2 "	6.00
14	11 "	2 $\frac{1}{4}$ "	6.00

#### Prices, Sugar and Cotton Screws.

Length of Screw.	Gear.	Size of Screw.	Each.
24 inches	Comp.	2 inches	\$18.00
30 "	"	2 "	19.00
33 "	"	2 "	19.50
36 "	"	2 "	20.00

Any kind of Sugar, Cotton, Claw or Planker Jack Screws not in the list made to order.

### COTTON SCREW.



Fig. 2157.

#### Prices, Cotton Screws, Fig. 2157.

Length of Screw.	Gear.	Size of Screw.	Each.
24 inches	Comp.	2 $\frac{1}{4}$ inches	\$24.00
30 "	"	2 $\frac{1}{4}$ "	25.00
36 "	"	2 $\frac{1}{4}$ "	26.00
42 "	"	2 $\frac{1}{4}$ "	28.00
36 "	Steel	2 $\frac{3}{4}$ "	45.00
42 "	"	2 $\frac{3}{4}$ "	48.00
48 "	"	2 $\frac{3}{4}$ "	52.00

### SUGAR OR COTTON SCREW.

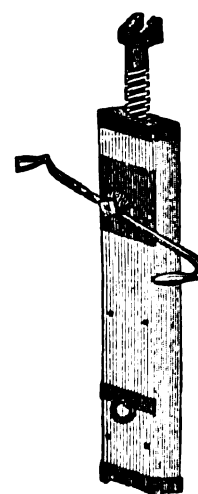


Fig. 2158.

#### Prices, Claw Jacks, Fig. 2159.

Length of Screw.	Gear.	Size of Screw.	Each.
24 inches	Comp.	2 inches	\$20.00
30 "	"	2 "	22.00
33 "	"	2 "	23.00
36 "	"	2 "	24.00
33 "	"	2 $\frac{1}{4}$ "	29.00
36 "	"	2 $\frac{1}{4}$ "	32.00
42 "	"	2 $\frac{1}{4}$ "	36.00
36 "	Steel	2 $\frac{3}{4}$ "	50.00
42 "	"	2 $\frac{3}{4}$ "	55.00
48 "	"	2 $\frac{3}{4}$ "	60.00

#### Prices, Timber Jacks, Fig. 2159.

Length of Screw.	Gear.	Size of Screw.	Each.
30 inches	Comp.	2 inches	\$22.00
33 "	"	2 "	23.00
36 "	"	2 "	24.00

## TELESCOPIC AND HYDRAULIC JACKS.

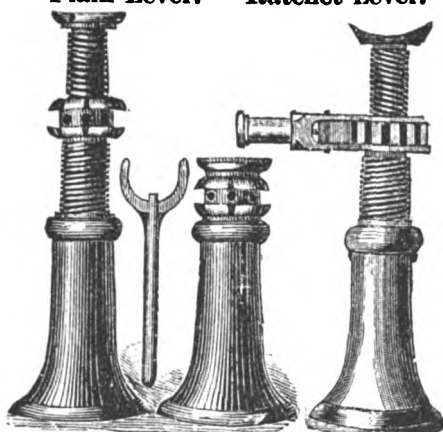
IMPROVED  
TELESCOPE SCREW JACKS.  
Plain Lever. Ratchet Lever.

Fig. 2160.

Fig. 2161.

These Jacks have double acting screws which operate simultaneously, raising the load nearly double the height of the base and in half the time required for ordinary jacks.

## Prices, Telescope Jacks, Figs. 2160 and 2161

Nos.	Height When Down.	Height When Run Out.	Plain Lever, Each.	Ratchet Lever, Each.
1	10 inches.	21 inches.	\$15.00	\$25.00
2	14 "	30 "	18.00	30.00
3	17 "	40 "	20.00	32.00
4	21 "	52 "	25.00	35.00
5	25 "	61 "	30.00	40.00

## Prices, Hydraulic Jacks, Fig. 2162.

10 Tons.....	To lift 12 inches, each,	\$125.00
15 ".....	" 12 " "	150.00
15 ".....	" 18 " "	165.00
20 ".....	" 12 " "	175.00
20 ".....	" 18 " "	190.00
30 ".....	" 12 " "	200.00
30 ".....	" 18 " "	225.00
10 " Ground lift.....	" 12 " "	135.00
15 " " ".....	" 12 " "	162.00
20 " " ".....	" 12 " "	190.00
30 " " ".....	" 12 " "	225.00

The Reliance Hydraulic Jacks have all the pumping apparatus, valves, etc., enclosed, and are dirt and dust proof. The pump piston is guided both top and bottom, thus preventing irregular wear of the packing and bushing.

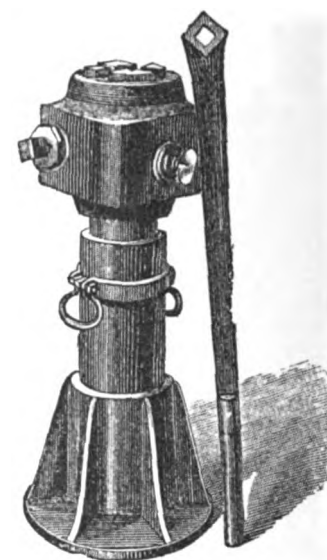


Fig. 2162.

## DUDGEON'S HYDRAULIC JACKS.

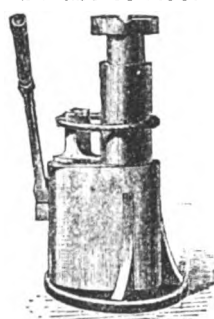
Horizontal Jack,  
Broad Base or Locomotive.

Fig. 2163.

## Plain Jack.

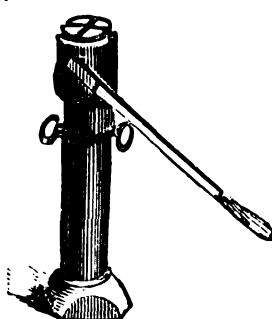


Fig. 2164.

## Broad Base Jack.

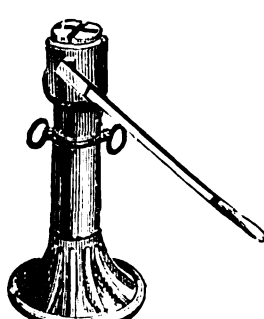


Fig. 2165.

## Ground Lifting Jack.

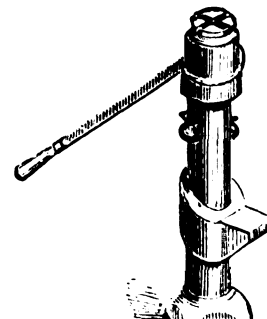


Fig. 2166.

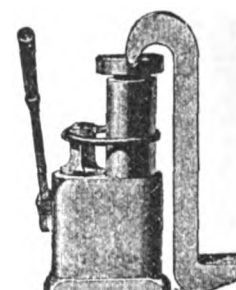
Horizontal Jack,  
Claw or Ground Lifting.

Fig. 2167.

## Prices, Hydraulic Jacks, Figs. 2164, 2165 and 2166.

Lift or Press Tons.	Run Out Inches.	Description.	Each.	Lift or Press Tons.	Run Out Inches.	Description.	Each.
4	12	Lift from the ground.....	\$ 60.00	15	18	Wide base for locomotive shops.....	\$150.00
4	24	" " ".....	65.00	20	12	Lift from the ground.....	200.00
7	12	Plain Jack.....	70.00	20	12	Wide base for locomotive shops.....	150.00
7	24	" " ".....	75.00	20	12	Plain Jack.....	120.00
7	12	Lift from the ground.....	85.00	30	9	" " ".....	150.00
7	12	Wide base for locomotive shops.....	80.00	30	12	" " ".....	175.00
7	18	" " ".....	85.00	30	9	Wide base for locomotive shops.....	170.00
7	24	Lift from the ground.....	90.00	30	12	" " ".....	200.00
10	12	Plain Jack.....	80.00	30	12	Lift from the ground.....	250.00
10	18	" " ".....	100.00	60	9	Cistern and force pump outside.....	250.00
10	12	Lift from the ground.....	100.00	60	12	" " ".....	275.00
10	12	Wide base for locomotive shops.....	95.00	90	9	Cistern and force pump outside.....	350.00
10	18	" " ".....	110.00	90	12	" " ".....	375.00
15	12	Plain Jack.....	100.00	100	12	" " ".....	400.00
15	12	Wide base for locomotive shops.....	125.00	120	7	" " ".....	450.00
15	12	Lift from the ground.....	150.00				

⚠ Larger sizes made to order.

## Prices, Horizontal Hydraulic Jacks, Figs. 2163 and 2167.

10, 15 or 20 ton jacks of these styles to run out 2 feet, made to order.

These Jacks run out their entire length horizontal or vertical, and will run out 6 inches further than the old kind while standing the same height, that is to say, a jack to run out 18 inches will measure little if any more (when down) than one of the old style that runs out 12 inches. The claw comes much nearer the ground, is made of wrought iron, and can be taken off when not in use. Sizes and prices same as Figs. 2164 to 2166.

## HYDRAULIC PULLING JACK.

Description Pulling Jack,  
Fig. 2168.

These Hydraulic Pulling Jacks are for stretching rigging, testing chains and ropes, pulling stumps, hoisting heavy weights, etc., in engine rooms or other places, especially where there is but little space.

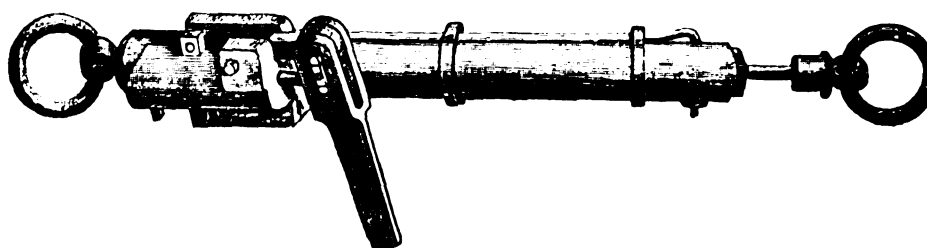


Fig. 2168.

Prices, Pulling Jacks,  
Fig. 2168.

To Stretch.	To Pull.	Each.
2 feet.	8 tons.	\$200.00
2 "	10 "	240.00
2 "	15 "	300.00
2 "	20 "	350.00
2 "	30 "	450.00



**CAST IRON JACK SCREW.**

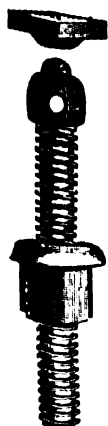


Fig. 2169.

**Prices, Cast Iron Jack Screws, Fig. 2169.**

Diam. of Screw.	Height over all.	Each.
3 inches	20 inches	\$3.50
3 "	24 "	4.00
3 "	28 "	4.50
3 "	30 "	4.75
3 "	36 "	5.50

**JACK SCREWS AND WAGON JACKS.**

**WAGON JACK SCREW.**



Fig. 2170.

**IRON CARRIAGE JACK.**



Fig. 2171.

**Prices, Wagon Jack Screws, Fig. 2170.**

Diam. of Screw.	Height of Stand.	Each.
1 1/2 inches	12 inches	\$5.25
1 1/2 "	14 "	6.00
1 1/2 "	16 "	6.75
1 3/4 "	14 "	6.75
1 3/4 "	16 "	7.50

**CHAMPION WAGON JACK.**

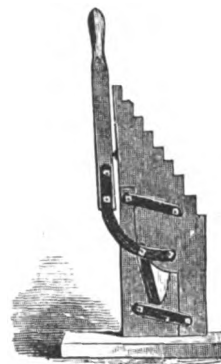


Fig. 2172.

**Prices, Iron Carriage Jacks, Fig. 2171.**  
No. 12.....each, \$1.50 No. 13.....each, \$2.75

**Prices, Champion Wagon Jacks, Fig. 2172.**

Made of best seasoned hard wood and wrought iron. Convenient and very powerful, and there is nothing to break or get out of order.

No. 1.....each, \$2.50 No. 2.....each, \$3.50

**HOUSE RAISING SCREW.**



Fig. 2173.

**Prices, House Raising Screws, Fig. 2173.**

Diam. of Screw.	Height over all.	Each.	Diam. of Screw.	Height over all.	Each.	Diam. of Screw.	Height over all.	Each.	Diam. of Screw.	Height over all.	Each.
1 3/4 ins.	12 ins.	\$4.80	2 ins.	20 ins.	\$7.60	2 1/4 ins.	18 ins.	\$8.80	2 1/2 ins.	16 ins.	\$9.60
1 3/4 "	14 "	5.10	2 "	22 "	8.00	2 1/4 "	20 "	9.30	2 1/2 "	18 "	10.20
1 3/4 "	16 "	5.40	2 "	24 "	8.40	2 1/4 "	22 "	9.50	2 1/2 "	20 "	10.80
1 3/4 "	18 "	5.70	2 "	26 "	8.80	2 1/4 "	24 "	10.30	2 1/2 "	22 "	11.30
2 "	12 "	6.00	2 "	28 "	9.20	2 1/4 "	26 "	10.70	2 1/2 "	24 "	11.90
2 "	14 "	6.40	2 1/4 "	12 "	7.50	2 1/4 "	28 "	11.10	2 1/2 "	26 "	12.40
2 "	16 "	6.80	2 1/4 "	14 "	7.90	2 1/2 "	12 "	8.50	2 1/2 "	28 "	12.90
2 "	18 "	7.20	2 1/4 "	16 "	8.30	2 1/2 "	14 "	9.00	2 1/2 "	30 "	13.40

**Description.**

The runners *A A* are from 9 to 10 feet long, 4 1/2 and 5 by 7 inches. The posts *B B B* are 12 feet long, 4 1/2x6, 5x7 and 6x8. 14 foot derrick is heavier. I use the best of elm, on account of its being tough, yet light. The lever *C* is 9 to 10 feet long, second growth ash. The fulcrum is 2 1/2 inches from the end of the lever, and on No. 4 Machine the big wheel is to the small one as 4 is to 1. The chains are of the best refined iron, and are all hand made, no machine made chain being able to stand the test. The chains are 13 to 17 feet long. The links are made to fit closely in the deep grooves of the small wheel which is cast on the side of the main wheel, and prevents the chain from slipping. The yoke *D* is from 2 1/4 to 2 3/4 by 5/8 to 3/4 in. thick. Bolts are all steel. The whole machine is hung on a 2 in. hook *J*, supported by a large clevis made out of iron 4 inches wide and 3/4 inches thick. The hook works on a swivel, and thus allows the machine to turn around, so you can hook on the stump either side most convenient without turning the derrick.

**BENNETT'S IMPROVED STUMP PULLER.**

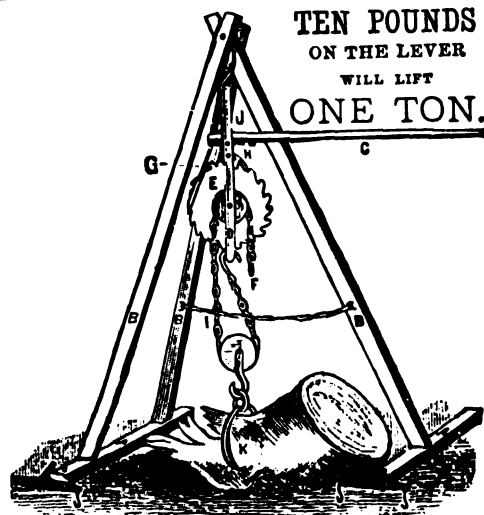


Fig. 2174.

**TEN POUNDS  
ON THE LEVER  
WILL LIFT  
ONE TON.**

**Prices.**

Complete, with root chain and everything necessary to go to work excepting items specified below as extras.

No. 1, 15 inch wheel.....each,	\$35.00
" 2, 18 "	40.00
" 3, 20 "	45.00
" 4, 23 "	50.00
" 5, 26 " extra heavy....	70.00

**Prices, Extras.**

These extras not furnished unless they are specially ordered, and are not included in prices of machines given above.

Grab Hooks, as shown in cut....extra each,	\$7.00
14 foot derrick, with long chain. "	2.00
Steel chain in place of iron.....	5.00
Whiffletrees.....per pair,	1.00

Machine best suited for general work is No. 4.

**Description.**

The beam is very long, heavy in proportion, and ironed on top and sides. Draft rod is 2x3 3/8 inch. Handles of oak, ironed on top and bottom, with bars 1 1/4 by 1/2 inch, also plated with iron on sides. Handhold solid iron, and well braced. Standard, mould, landside and point of cast steel.

**"MAMMOTH" HARD-PAN RAILROAD PLOW.**

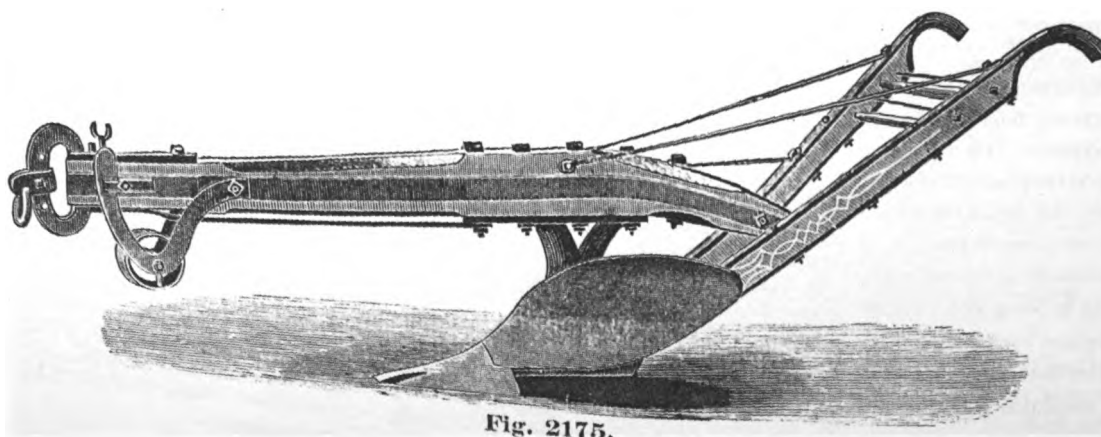


Fig. 2175.

**Prices**

Complete as per cut for use with horse or steam power for heavy work, hard pan and rock. Cuts 9 in. furrow, 6 to 12 ins. deep. Weight, 325 lbs.

No. 2, Left Hand.	
Each.....	\$75.00
No. 12, Right Hand.	
Each.....	75.00

## PLOWS, ROAD LEVELERS, ETC.

## ROAD OR GRADING PLOW.

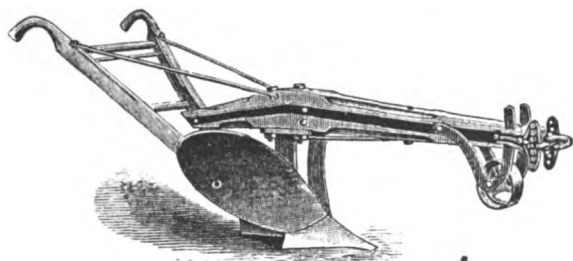


Fig. 2176.

This Plow is of great strength and remarkable lightness of draft. The standard is of wrought iron V shaped. The share, landside and mould board are of the very best steel. The Plow is made to cut a deep, rather than a wide furrow, and can be regulated to any depth required. It does not turn the soil over, but loosens it, leaving the trash on top so that it will not interfere with the scraper when filling.

No. 3, Left hand, Weight, 200 lbs. .... each, \$30.00  
 " 13, Right " " 200 " ..... " 30.00

## TOWNSHIP OR BREAKING PLOW.

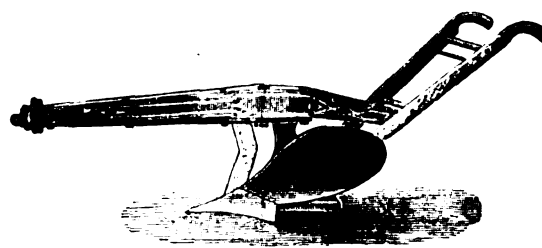


Fig. 2177.

This Plow is made with special reference to township road work. It has the wrought iron V shaped standard. The mould board, share and landside are made of the very best steel, thoroughly hardened, and will scour in any soil. This plow has great strength, but is lighter than Nos. 3 and 13, will run perfectly steady in all kinds of ground and is very light draft for two horses. It cuts a furrow eleven inches wide and from six to twelve inches deep as desired.

No. 5, Left hand, Weight, 100 lbs. .... each, \$22.00  
 " 15, Right " " 100 " ..... " 22.00

## CONTRACTORS' ROOTER PLOW.

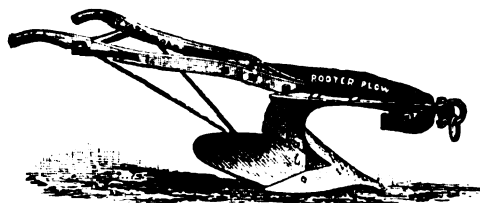


Fig. 2178.

The Rooter is made entirely of iron excepting the handles, which are made of the toughest rock elm that can be procured, and are firmly braced with wrought iron braces and fenders placed on sides to protect them from wearing. The beam is made of superior cast iron, and strengthened by a wrought iron truss shrunk on the entire length of it. The points are of heavy wrought iron laid with steel, and locked and bolted to the plow.

Plow, complete.... \$30.00 Beam.....\$8.00 Cast Gauge Shoe...\$0.50  
 Heavy Wrought Share or Point..... 7.00 Mould Board..... 1.00  
 Landside Strip..... \$0.50 Pair of Handles, Wrung and Block..... 2.50

## ROAD LEVELER.

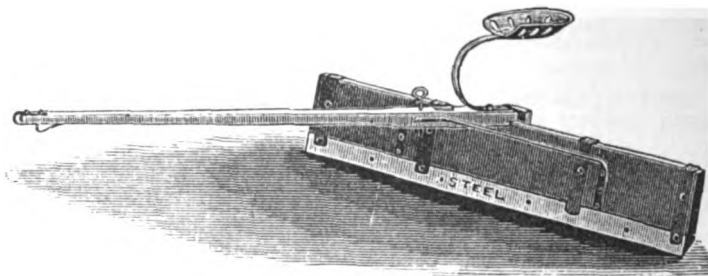


Fig. 2179.

The Leveler is for smoothing roads of any kind, dirt or gravel; unsurpassed for use on turnpikes. It is used largely in the spring when the frost is first out of the ground, and before the regular road work is done. By merely driving the leveler once or twice over the roughest roads the ridges are cut down, the ruts filled up, and the road bed put in temporary good order. It is well made and strongly put together. The blade is of steel.

Each ..... \$12.00

## SURFACE GRADER.

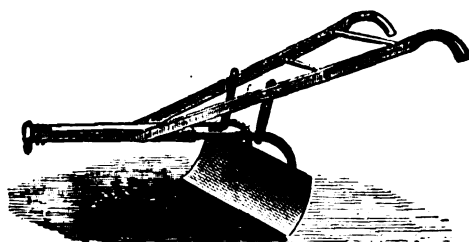


Fig. 2180.

This is intended for one horse only, and is used for removing the plowed ground from the sides of the road bed immediately opposite. It is worked by either backing the horse up to the place of filling, or by crossing over from side to side, the driver retaining his load until the proper place is reached, or gradually losing it from beneath as he may wish. It is also of great service in grading and leveling off after the scraper, leaving the road bed level or rounded up as desired. The beam is of oak, and two substantial wrought standards as shown in cut. The blade is of steel.

Each..... \$9.00

## DAVIS' PATENT ROAD MACHINE.

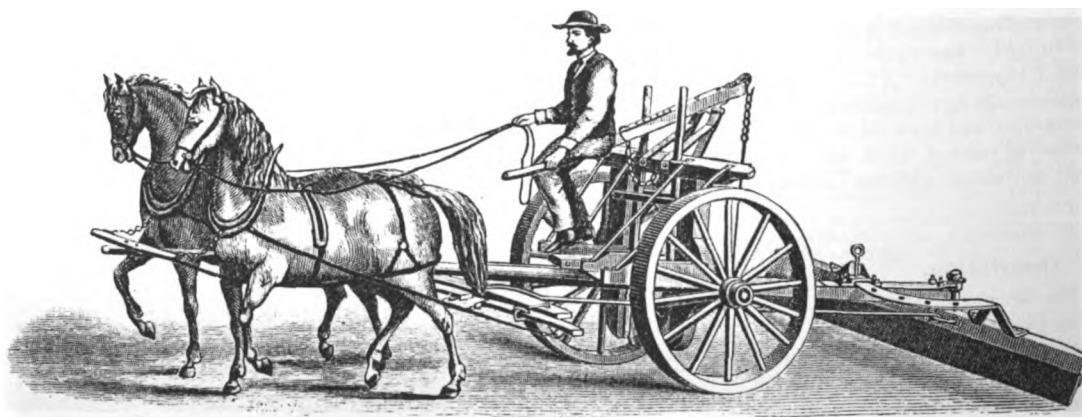


Fig. 2181.

This machine is so constructed that it can be easily worked by one team of horses, and operated by one man. The scraper being located behind the wheels, leaves the ground in perfect condition, which is not the case with the heavy four wheel machines, which require in many instances six horses and several men to operate. For breaking new roads it has no equal removing the dirt from around trees, stumps, rocks, etc., and taking the place of the plow in breaking ground to be removed, and then removing the earth if desired. After this work is done, the same machine will scrape the newly made road to a level, laying out the gutters and rounding up the middle in handsome shape. This machine is admirably adapted for removing snow from roads, cleaning snow from lakes and ponds preparatory to cutting ice, and also for leveling land before using roller for beautifying lawns, etc. Made with any length scraper desired.

Prices on application.

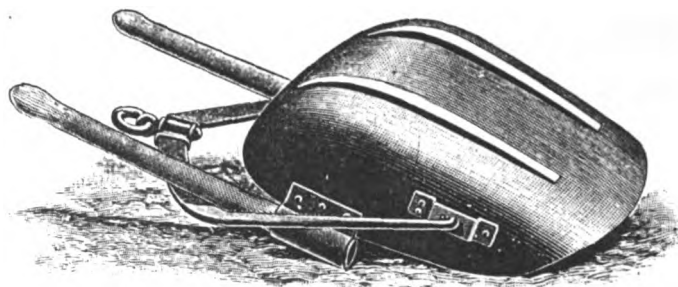
## DRAG AND WHEEL SCRAPERS.

### Without Runners.



**Fig. 2182.**

**With Runners.**



**Fig. 2183.**

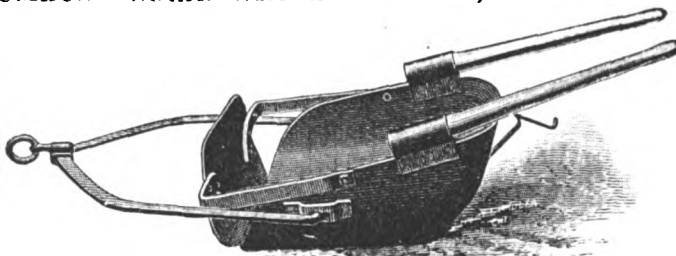
These Scrapers are made of a single sheet of steel, pressed into the best and most practicable shape for working. They are made with one continuous curve from the center up the sides and back, giving them greater strength and capacity than can be obtained in any other way.

They will work in any kind of soil, whether plowed or not, and enter the ground as readily as a plow. The bails are of steel and of improved pattern, with strong and perfect working swivels. I ship without runners unless otherwise directed.

No. 1 carries 7 feet of earth, used for long haul or down grade.....	each,	\$15.00
" 2 " 5 " " for all ordinary grading, farm or road work.....	"	14.00
" 3 " 3 " " intended for work on narrow ditch with one horse.....	"	13.00
Runners for any of above, only sent when specially ordered.....	extra per pair,	1.00
End Gates " " " " ".....	each,	5.00

**"COLUMBUS" SOLID STEEL SCRAPER, WITH END GATE.**

This End Gate is so arranged that when Scraper is filling it acts as an apron at back of Scraper, preventing the earth from running over the back, and when Scraper is filled is thrown over in front and prevents the load from losing out in hauling.



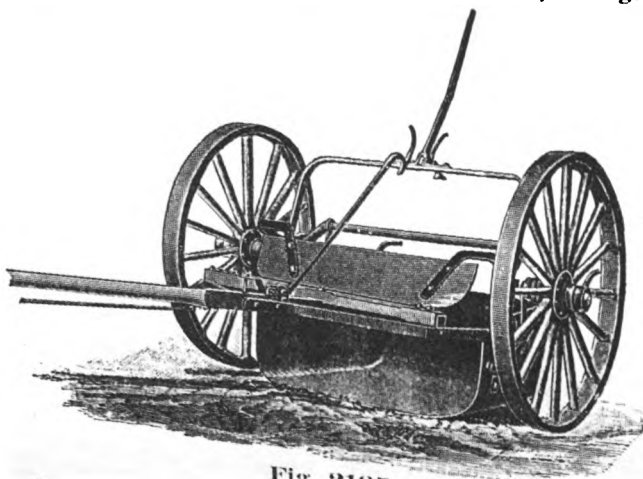
By using this end gate much larger loads can be taken and carried down hill or over obstructions without losing any of the earth. When dumped the end gate opens automatically, sliding forward on the bail, and locks automatically to the back of the Scraper.

**Fig. 2184.**

**End Gates, as shown in above cut, are extra, and only sent when specially ordered.**

### "K. & J." WHEEL SCRAPERS.

**Pressed Steel Bowl, with Automatic End Gate, Filling.**

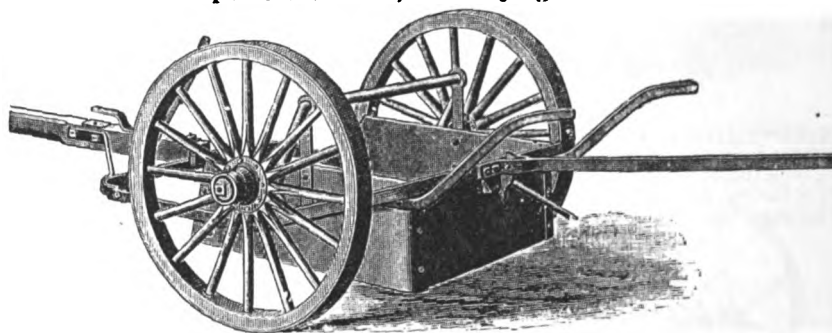


**Fig. 2185.**

The bowl or box of this Scraper is made of the best steel plate  $\frac{3}{8}$  of an inch thick. The axle, tongue, braces or bail, lever and hangers are all of the best material, "Sarven" patent wheels. This Scraper has no wood parts to rot or castings to break, no ratchets to clog up, and fewer nuts to come off and parts to get out of order than any other wheel scraper. It is so constructed that the team does most of the lifting, and one man can fill, raise and dump the largest size with ease. It is so hung that there is absolutely no strain whatever on the horses' necks.

These Scrapers are furnished with End Gates only when specially ordered.

**Square Steel Box, in Carrying Position.**



**Fig. 2186.**

No. 2, Square steel box, capacity 12 cubic feet.....	each, \$50.00
" 3, " " " 16 " " ".....	" 55.00
" 2, Pressed steel bowl, " 12 <sup>1</sup> / <sub>2</sub> " " ".....	" 55.00
" 3, " " " 16 <sup>1</sup> / <sub>2</sub> " " ".....	" 60.00
Automatic Front End Gates.....	" 5.00

No. 3 has "Snatch Rod" for extra team when loading. I do not furnish whiffletrees or neck yokes with Scrapers.

## JACOBS' PATENT WOOD WHEEL.

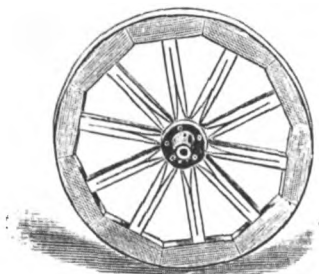


Fig. 2187.

This Wheel will not shrink in any climate, and the tire cannot come off. It has ten spokes of thoroughly seasoned wood, and each spoke is supplied with a separate felloe. The hub is of chilled cast iron, and firmly riveted to the spokes, which are cut as to counterbrace each other. The spokes are keyed from the center after tire is shrunk on. It is well painted.

WHEELBARROWS.  
BARROWS PACKED  
FOR DOMESTIC SHIPMENT.

Fig. 2188.

## BARROWS PACKED FOR EXPORT SHIPMENT.

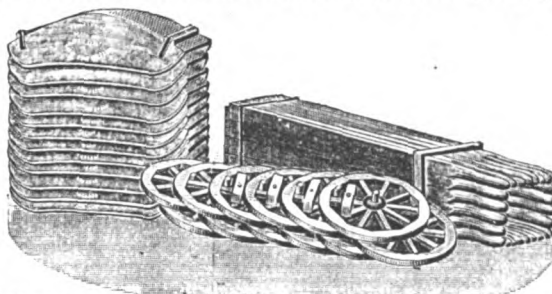


Fig. 2190.

## JACOBS' PAT. STEEL SPOKE WHEEL



Fig. 2189.

This Wheel has a wrought iron tire and steel spokes. It is so constructed, having spokes tightened from center, that the tire cannot come off or the spokes become loosened. Hubs are hardened on inside; oil hole in hub. Diameter of wheel, 17 inches; wrought iron tire, 1 1/2 inches wide.

The Best Barrow Wheel Manufactured.

## RAILROAD OR CANAL BARROW.

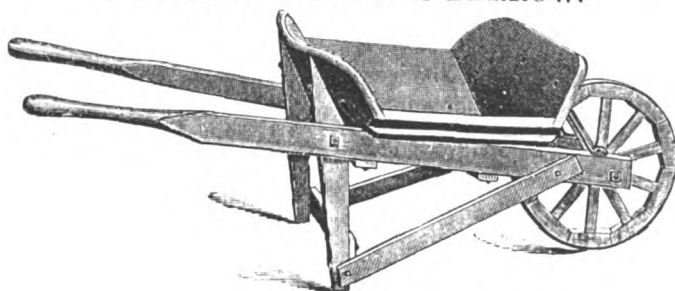


Fig. 2191.

Full size, bent tray, planed and well finished, bolted securely to frame. The legs extend upward, serving as a brace to the bowl to which they are bolted; they are also bolted to handles. This barrow has all the merits of other bolted barrows, and in addition has the Jacobs' Patent Wheel, superior in every way to any wood wheel manufactured. The axle bolt holds the barrow firmly together.

With Jacobs' Patent Wood Wheel.....per doz., \$20.00  
With Steel Spoke Wheel....." 22.00

## STRAIGHT HANDLE STONE BARROW.

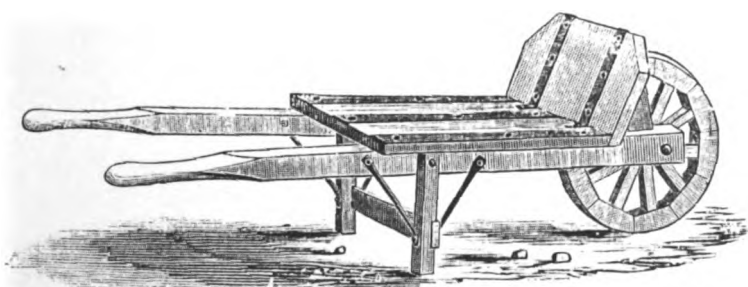


Fig. 2193.

For stone or pig metal. This is a strong, well-made barrow, iron strapped over the bottom, and well bolted together. It has the Jacobs' Patent Wheel, with 13 1/4 inch tire and hub in proportion. Painted.

With Jacobs' Patent Wood Wheel.....per doz., \$39.00  
With Steel Spoke Wheel....." 42.00

## STEEL BOTTOM STONE BARROW.

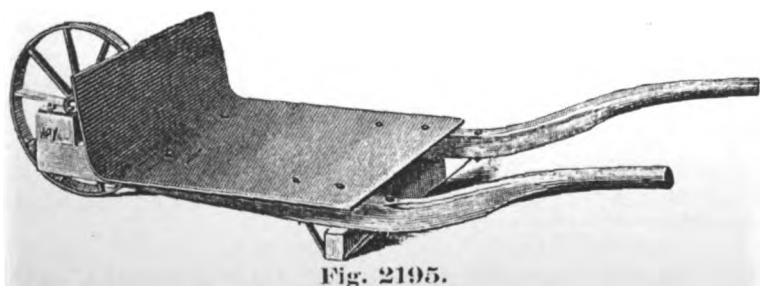


Fig. 2195.

For stone or pig metal. Bottom and dash formed of one plate of steel one-fourth inch thick, steel spoke wheel. Diameter of wheel, 17 inches; tire, 1 1/4 x 3/8 inches; steel spokes, 7/8 x 1/4 inch.

With Jacobs' Patent Steel Spoke Wheel.....per doz., \$78.00

## JUMBO CORN BARROW.

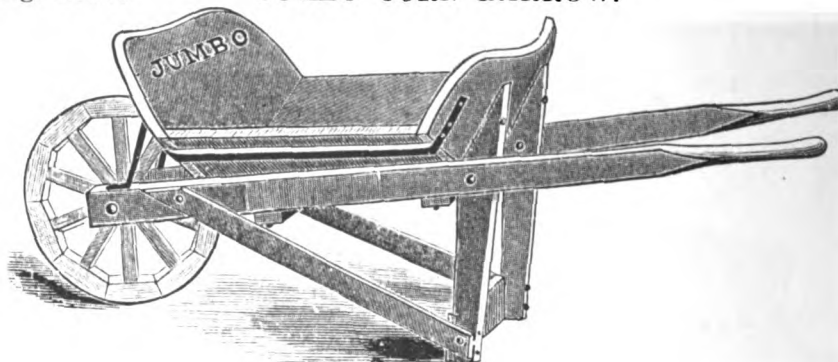


Fig. 2192.

Same construction as Fig. 2191. Capacity, 9 cubic feet; Jacobs' Patent Wheel, 17 inches in diameter; wrought iron tire, 1 1/2 inches wide. For corn, coal, manure, sawdust, ashes, etc.

With Jacobs' Patent Wood Wheel.....per doz., \$30.00  
With Steel Spoke Wheel....." 32.00

## BENT HANDLE STONE BARROW.

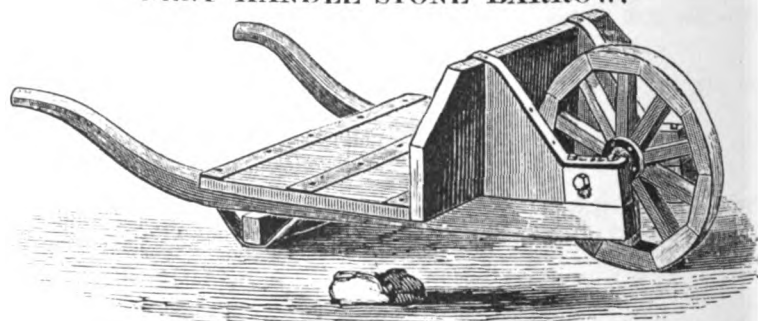


Fig. 2194.

Well ironed, thoroughly bolted, bent handles. Jacobs' Patent Wheel, with 13 1/4 inch tire, and extra strong hub. Painted.

With Jacobs' Patent Wood Wheel.....per doz., \$45.00  
With Steel Spoke Wheel....." 48.00

## STAVE OR BARK BARROW.



Fig. 2196.

For staves, bark, bales, boxes, etc.; strongly made of hard wood. Body and dash strapped with heavy iron. Well finished, painted and varnished. A serviceable barrow for use at boat landings and depots. Diameter of wheel, 21 inches; width of tire, 1 1/4 inches.

With Jacobs' Patent Wood Wheel.....per doz., \$55.00  
With Steel Spoke Wheel....." 58.00



# WHEELBARROWS.

## OPEN BOTTOM BRICK BARROW.

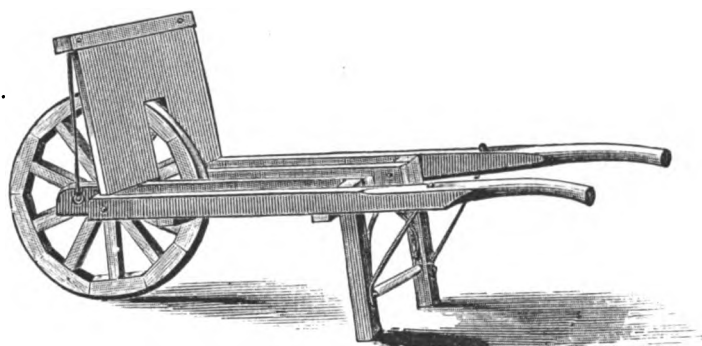


Fig. 2197.

This Barrow is designed for use at brick yards, and especially for handling green brick. Diameter of wheel, 21 inches; width of tire, 1 3/4 inches.  
With Jacobs' Patent Wood Wheel..... per doz., \$45.00  
With Steel Spoke Wheel ..... " 48.00

## CLOSED BOTTOM BRICK BARROW.

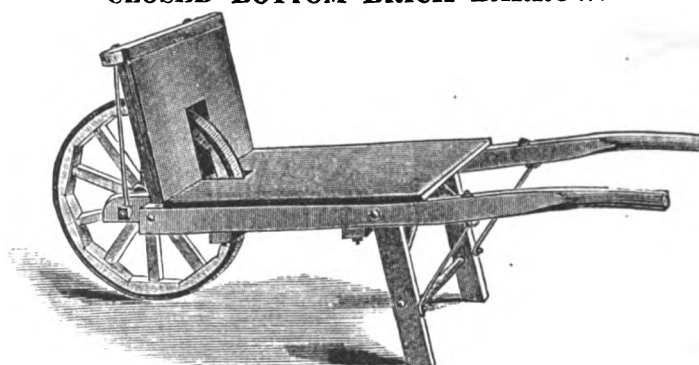


Fig. 2198.

This Barrow is the same as fig. 2197, except that it has closed bottom.  
With Jacobs' Patent Wood Wheel..... per doz., \$50.00  
With Steel Spoke Wheel ..... " 53.00

## ORE OR MORTAR BARROW.

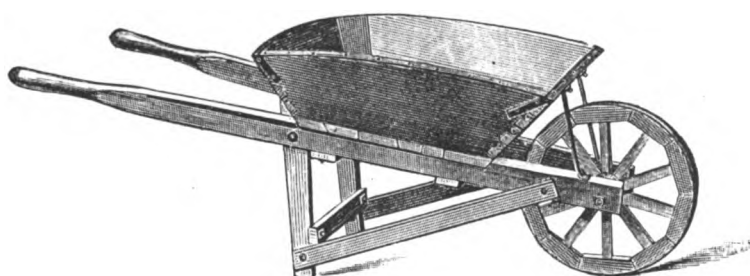


Fig. 2199.

For ore, coal, mortar, sand or dirt. All hard wood. The sides and end pieces of bowl being dorettailed together, and firmly nailed, cannot come apart. The legs extend upward as a brace to the bowl, and are bolted to bowl and to handles. The best general purpose barrow made. Painted.  
With Jacobs' Patent Wood Wheel..... per doz., \$25.00  
With Steel Spoke Wheel ..... " 27.00

## WHARF OR OYSTER BARROW.

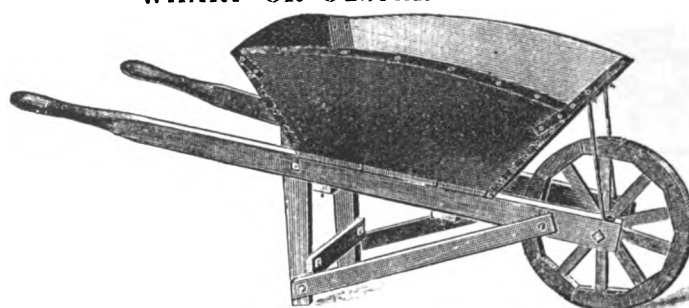


Fig. 2200.

All hard wood. Sides and end pieces of bowl dorettailed together and nailed. Length of bowl: top, 36 inches; bottom, 20 inches. Width: top, 34 inches; bottom, 18 inches. Depth, 14 inches. General purpose Wharf Barrow; also suited for carrying ashes, shavings, etc., and strong enough for coal or stone. Painted.  
With Jacobs' Patent Wood Wheel..... per doz., \$36.00  
With Steel Spoke Wheel ..... " 38.00

## Description Fig. 2201.

These Barrows are made of thoroughly seasoned wood, with double frames firmly bolted together, iron braced and so constructed that by simply removing one bolt (the axle) and two nuts, they can be folded flat down and shipped at lowest rate of freight. But a moment's time is required to set up for use.  
No. 3, Medium size, capacity 3 1/2 cu. ft., painted, striped and varnished, highly finished.  
No. 4, Large size, capacity 5 cu. ft., finished same as No. 3.  
No. 2, Small size, capacity 3 cu. ft., painted, varnished, plainly finished.  
No. 3 C, same as No. 3, capacity 3 1/2 cu. ft., painted, varnished, plainly finished.  
No. 4 C, same as No. 4, capacity 5 cu. ft., painted, varnished, plainly finished.  
Diameter of No. 2 wheel, 17 ins.; width of tire, 1 1/8 ins.  
Diameter of Nos. 3 and 3 C wheels, 19 ins.; width of tire, 1 3/8 ins.  
Diameter of Nos. 4 and 4 C wheels, 21 ins.; width of tire, 1 3/4 ins.

## GARDEN OR FARM BARROW.

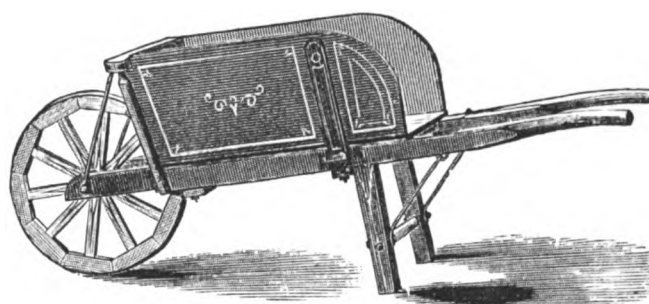


Fig. 2201.

## Prices, Fig. 2201.

	Per doz.
No. 2, With Patent Wood Wheel,	\$32.00
" 2, With Steel Spoke Wheel...	34.00
" 3, With Patent Wood Wheel,	42.00
" 3, With Steel Spoke Wheel...	45.00
" 3 C, With Patent Wood Wheel,	36.00
" 3 C, With Steel Spoke Wheel,	39.00
" 4, With Patent Wood Wheel,	47.00
" 4, With Steel Spoke Wheel...	50.00
" 4 C, With Patent Wood Wheel,	42.00
" 4 C, With Steel Spoke Wheel,	45.00

## PATENT WOOD WHEEL.

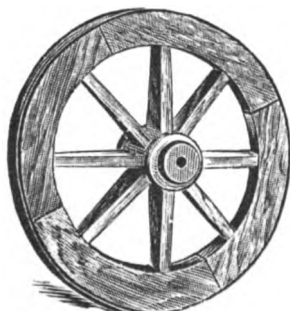


Fig. 2202.

Cut shows (the wood wheel with) patent combined collar and box in place on wheel. It has a 1 1/4 inch bearing on each end of hub, 7/8 collar, and being all cast in one piece covering the end of the hub, prevents same from checking or splitting. A 1/2 inch bolt passes through the handle and hub, the wheel revolving on bolt.

## IMPROVED BOLTED RAILROAD OR CANAL BARROW.

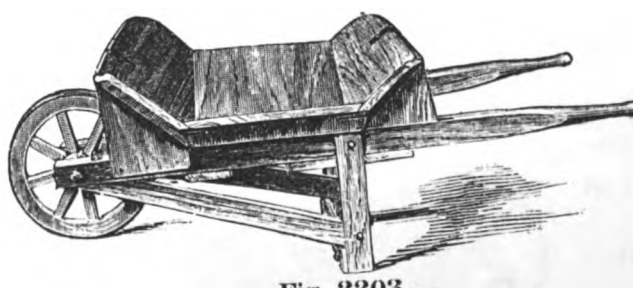


Fig. 2203.

The Improved Bolted Barrow has tray bolted to the handles. Legs and braces are all bolted. A 1/2 inch bolt passes through the handle and hub, the wheel revolving on bolt. Bolt holds the handles firmly to the wheel and prevents spreading when dumping heavy loads.  
With Patent Wood Wheel ..... per doz., \$17.00  
With Patent Steel Wheel ..... " 18.50

## PATENT STEEL WHEEL.



Fig. 2204.

The new steel wheel has a 1 1/2 inch tire, 1 1/4 inch spokes and 6 1/2 inch bearing on the bolt. The collar forms a washer against the handles which keeps out all dirt and sand from the axle.



## WHEELBARROWS.

## COLUMBUS STEEL TRAY BARROWS.

No. 1, For Earth, Sand, Ore and Foundry Use.

No. 2, For Coal, Manure, Cinders, Ashes, etc.

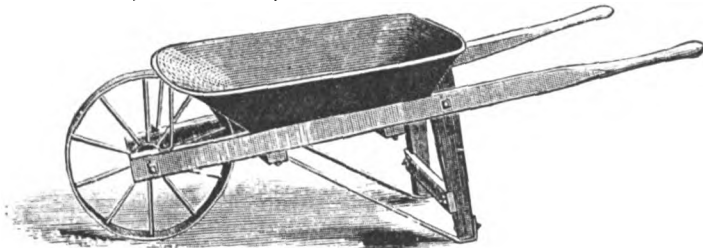


Fig. 2205.

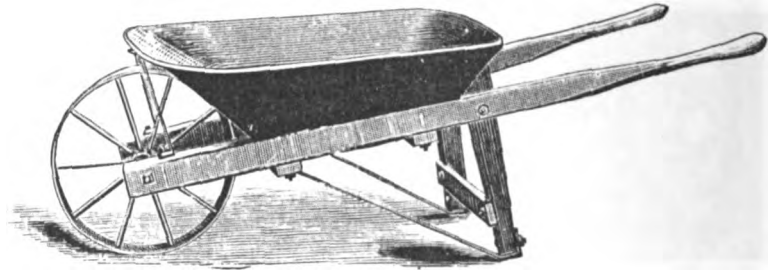


Fig. 2206.

No. 1, Tray of No. 14 steel; capacity,  $3\frac{1}{2}$  cubic feet.....each, \$5.50    No. 2, Tray of No. 13 steel; capacity, 5 cubic feet.....each, \$6.50  
 No. 3, Tray of No. 12 steel; capacity, 6 cubic feet.....each, \$7.50

The Trays of these Barrows are stamped from a solid plate of steel without seam or rivets, and have great strength and stiffness. The frames are strongly made of seasoned, hardwood lumber, well finished and painted. The wheels are 17 inches in diameter, have wrought iron tires,  $1\frac{1}{2}$  inches wide, and steel spokes.

## SEAMLESS STEEL BARROWS.

Dirt Barrow.



Fig. 2207.

Nos.	Capacity.	Tray.	Handles.	Weight.	Each.
1	3 cu. ft.	No. 15 Steel.	No. 13 Steel.	68 lbs.	\$11.50
2	3 "	" 14 "	" 12 "	74 "	12.00
3	3 "	" 13 "	" 12 "	80 "	12.50
4	3 "	" 12 "	" 10 "	86 "	14.00
5	1 "	" 12 "	" 10 "	92 "	15.50

Foundry Barrows.

Nos.	Capacity.	Tray.	Handles.	Weight.	Each.
21	3 cu. ft.	No. 13 Steel.	No. 10 Steel.	85 lbs.	\$14.00
22	3 "	" 12 "	" 10 "	100 "	16.50
23	4 "	" 12 "	" 10 "	110 "	18.50

These Barrows are very strong, the trays and handles being of solid steel plates pressed to required shapes. The axles are stationary, being threaded and screwed into the brackets, brace the handles and are bearings for the wheels.

IRON DIRT BARROW.

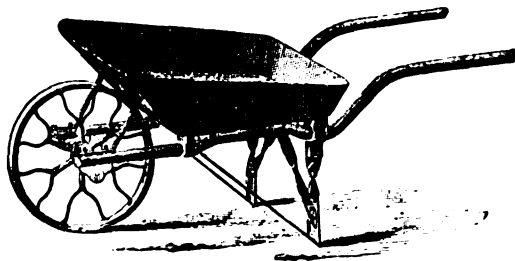


Fig. 2210.

No. 4, Tray of No. 16 iron, holding 3 cu. ft. of earth, 15 inch wheel.....each, \$10.75  
 No. 4 $\frac{1}{2}$ , Tray of No. 14 iron, holding 3 cu. ft. of earth, 15 inch wheel.....each, \$11.50  
 No. 5, Tray of No. 14 iron, holding 4 cu. ft. of earth, 16 inch wheel.....each, \$13.50

Patent Paper Sheathes.

These Papier Maché Sheathes can be applied to the handles of Barrows Figs. 2210 and 2212, when so ordered.

Extra for each barrow.....net, \$1.00

TUBULAR PIG METAL BARROW.



Fig. 2213.

No. 1, Weight, 80 lbs.....each, \$20.00

Pig Metal Barrow.

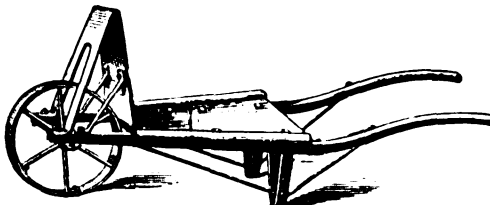


Fig. 2208.

These barrows are very substantial and calculated for heavy work and rough usage. The tray, front and front braces are pressed from a single plate of steel.

No. 15, Bed No. 12 Steel. Handles No. 10 Steel. Weight, 120 lbs. Wheel, 16 inches diameter, extra heavy .....each, \$18.00

STEEL CHARGING BARROW, For Furnaces.

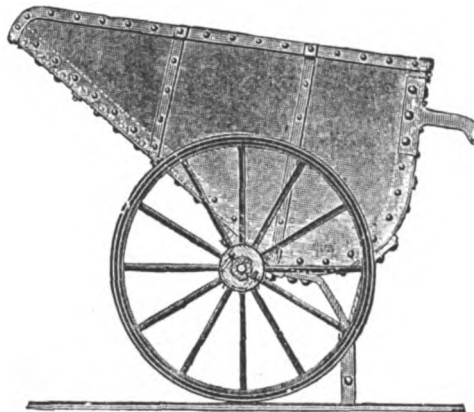


Fig. 2211.

No. 1, Capacity, 10 cubic feet.....each, \$58.00
" 2, " 12 " " " " " 62.00
" 3, " 14 " " " " " 65.00
" 4, " 16 " " " " " 68.00
" 5, " 20 " " " " " 72.00

Iron Charging Barrows, 6 per cent. less than above prices.

TUBULAR TWO-WHEELED COAL BARROW.



Fig. 2214.

Holds 500 lbs.....each, \$38.00

Coal Barrow.



Fig. 2209.

Nos.	Capacity.	Tray.	Handles.	Weight.	Each.
11	200 lbs.	No. 14 Steel.	No. 12 Steel.	78 lbs.	\$14.50
12	250 "	" 14 "	" 12 "	84 "	18.00
13	325 "	" 14 "	" 12 "	90 "	20.00
13 $\frac{1}{2}$	325 "	" 12 "	" 10 "	105 "	22.00
14	400 "	" 11 "	" 10 "	130 "	26.00

Brick Barrows.

Rigid Bearings.

Nos.	Bed.	Handles.	Weight.	Each.
31	Solid, No. 14 Steel.	No. 10 Steel.	95 lbs.	\$14.00
32	Open, " 11 "	" 10 "	115 "	17.00

Spring Bearings.

No.	Bed.	Handles.	Weight.	Each.
33	Open, No. 14 Steel.	No. 10 Steel.	135 lbs.	\$20.00

Wheel of No. 31, 16 ins. diameter; Nos. 32 and 33, 20 ins.

IRON COAL BARROW.

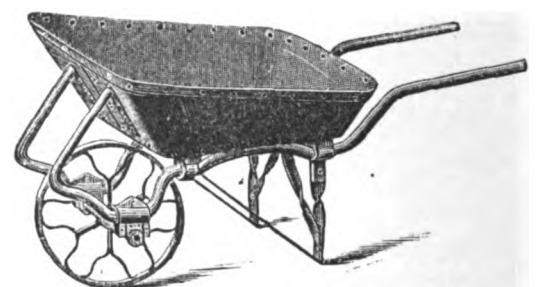


Fig. 2212.

No. 6, Tray of Nos. 16 and 12 iron; capacity, 225 lbs. of coal; 16 inch wheel.....each, \$15.00  
 No. 7, Tray of Nos. 16 and 12 iron; capacity, 300 lbs. of coal; 16 inch wheel.....each, \$18.00  
 No. 8, Tray of Nos. 16 and 12 iron; capacity, 350 lbs. of coal; 16 inch wheel.....each, \$20.00

Two Wheel Coal Barrow.

No. 13 $\frac{1}{2}$ , Tray of Nos. 14 and 10 iron; capacity, 600 lbs. of coal; two 17 in. wheels, each, \$38.00  
 All of above Barrows furnished with Paper Sheathes on handles when so ordered.

TUBULAR PIG METAL BARROW.



Fig. 2215.

No. 11, Weight, 78 lbs.....each, \$16.00  
 No. 11, Fitted to receive wooden sides, " 17.50

# TUBULAR STEEL WHEELBARROWS.

## STEEL DIRT BARROW.

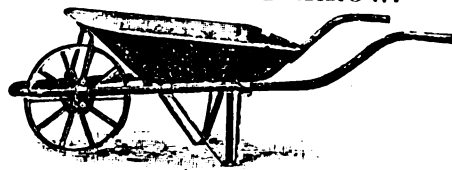


Fig. 2215a.

This Barrow is intended for moving earth, sand, gravel, etc.

No. 4.—Tray made of No. 15 steel; capacity, 3 cubic feet of earth; weight of barrow, 70 lbs.; suitable for light work, as carrying loose earth, sand, etc.

Each .....\$10.75

No. 4<sup>1</sup>/<sub>2</sub>.—Tray made of No. 14 steel; capacity, 3 cubic feet of earth; weight of barrow, 75 lbs.

Each .....\$11.50

No. 5.—Tray made of No. 14 steel; capacity, 4 cubic feet of earth; weight of barrow, 82 lbs.

Each .....\$13.50

## STEEL MINING AND GENERAL PURPOSE BARROW.

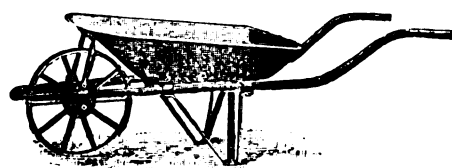


Fig. 2215d.

This Barrow has extra strong wheel, legs and braces. It is intended for hard usage, and is the best general purpose all metal barrow manufactured.

No. 6.—Tray made of No. 14 steel; capacity, 3 cubic feet of earth; weight of barrow, 80 lbs.

Each .....\$12.25

No. 7.—Tray made of No. 14 steel; capacity, 4 cubic feet of earth; weight of barrow, 87 lbs.

Each .....\$14.25

## BARROWS PACKED FOR SHIPMENT.

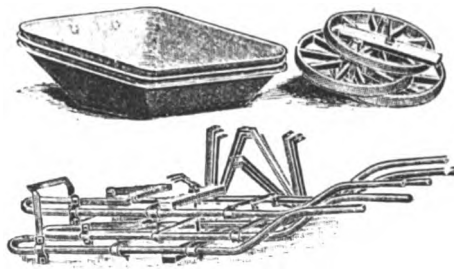


Fig. 2215b.

These Barrows have tubular iron frames, steel trays and patent steel wheels. The tubular iron forming the handles passes around and protects the wheel, and makes it an easy matter to dump the barrow forward when desired.

The trays are stamped from a solid plate of steel, and are without seam or rivet, and have much greater strength and are more durable than riveted iron trays of same thickness.

The wheels are so constructed, having the spokes tightened from the center, that it is impossible for tires to come off or spokes to be loosened. These wheels revolve on a fixed shaft or axle bolt, similar to a buggy wheel, and run true and evenly, and the axle shaft serves as a brace to the handles.

The wheels used with dirt barrows Nos. 4, 4<sup>1</sup>/<sub>2</sub>, and 5 are 16 inches in diameter, iron tire 1<sup>3</sup>/<sub>8</sub> x 3<sup>3</sup>/<sub>8</sub>, steel spokes 5<sup>3</sup>/<sub>8</sub> x 1<sup>1</sup>/<sub>4</sub>. The wheels used on mining or general purpose barrows, also on coal, coke and pig metal barrows, have iron tire 1<sup>3</sup>/<sub>4</sub> x 3<sup>3</sup>/<sub>8</sub>, steel spokes 3<sup>1</sup>/<sub>4</sub> x 3<sup>3</sup>/<sub>8</sub>, and extra heavy malleable hubs. These barrows, Nos. 6 to 13, also have extra strong leg braces, etc., being intended for the heaviest work and hard usage.

All of these tubular steel barrows knock down completely for shipment and storage (see Fig. 2215b), and can be easily set up by any one. The corresponding parts of barrows of the same size are alike, and in case of loss or breakage of any piece it can be readily replaced.

## PIG METAL BARROW.

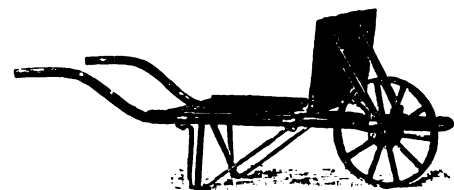


Fig. 2215f.

This barrow is built very heavy, for wheeling pig metal, etc.

No. 13.—Weight of barrow, 100 pounds.  
Each .....\$18.00

## STEEL COAL BARROW.

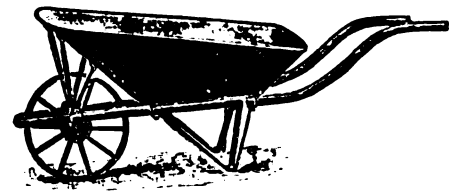


Fig. 2215c.

No. 7.—Tray made of No. 14 steel; capacity, 215 lbs. of coal; greatest width of tray, 30 inches; weight of barrow, 87 lbs.

Each .....\$14.25

No. 10.—Tray made of No. 13 steel; capacity, 350 lbs. of coal; greatest width of tray, 35 inches; weight of barrow, 112 lbs.

Each .....\$20.00

## COKE OR CHARCOAL BARROW.

No. 12.—Tray made of No. 15 steel; capacity, 3<sup>1</sup>/<sub>2</sub> bushels of coke or charcoal; greatest width of tray, 35 inches; weight of barrow, 100 lbs.

Each .....\$18.50

## STEEL FOUNDRY BARROW.

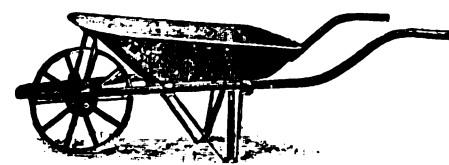


Fig. 2215e.

The strongest and most durable wheelbarrow made. Intended for wheeling castings, hot irons, etc., and for general foundry and furnace use.

No. 8.—Tray made of No. 12 steel; size of tray same as Nos. 4 and 6; weight of barrow, 90 lbs.

Each .....\$14.00

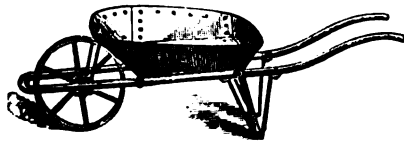
No. 9.—Tray made of No. 12 steel; size of tray same as Nos. 5 and 7; weight of barrow, 97 lbs.

Each .....\$16.00



**WHEELBARROWS, BAGGAGE WAGONS, ETC.**

**Dirt Barrow.**



**Fig. 2216.**

No. 4, Tray of No. 16 iron, holding 3 cubic feet of earth. Weight, 65 lbs.....each, \$10.75

No. 4½, Tray of No. 14 iron, holding 3 cubic feet of earth. Weight, 70 lbs.....each, \$11.50

No. 5, Tray of No. 14 iron, holding 4 cubic feet of earth. Weight, 80 lbs.....each, \$13.50

No. 6, Tray of No. 14 iron, holding 5 cubic feet of earth or 225 lbs. of coal, adapted for same use as No. 5, and as a small coal barrow. Weight, 85 lbs.....each, \$15.00

**Mining Barrows.**

No. 4 M, same capacity as No. 4.....each, \$11.50

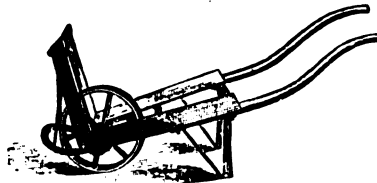
" 4½ M, " " " 4½ " " 12.25

" 5 M, " " " 5 " " 14.25

" 6 M, " " " 6 " " 15.75

These Barrows are made with trays of same capacity as Nos. 4, 4½, 5 and 6, but are made heavier and are especially adapted for miners' use.

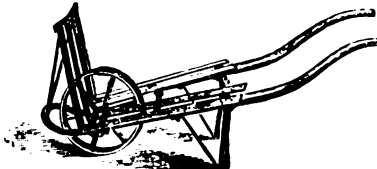
**TUBULAR BARROWS.  
Green Brick Barrow.**



**Fig. 2217.**

No. F, Weight, 80 lbs.....each, \$18.00

**Dry Brick Barrow.**



**Fig. 2219.**

No. G, Weight, 80 lbs.....each, \$18.00

**Foundry Barrows.**

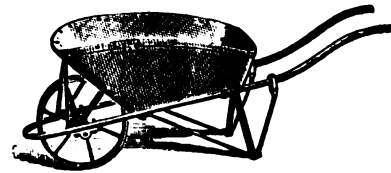
No. 4 A, same capacity as No. 4.....each, \$14.00

" 5 A, " " " 5 " " 15.00

" 6 A, " " " 6 " " 16.50

These Barrows are made with Trays of No. 12 iron, heavy legs and wheels, and especially adapted for wheeling castings, hot cinders, and general foundry and furnace use.

**Coal Barrow.**



**Fig. 2218.**

No. A, Tray holding 325 pounds of coal. Greatest width of tray, 30 inches. Weight, 135 pounds. Each .....\$26.00

No. B, Tray holding 400 pounds of coal. Greatest width of tray, 36 inches. Weight, 145 pounds. Each .....\$29.00

No. C, Tray holding 260 pounds of coal. Greatest width of tray 25 inches. Especially designed for use in coal bunkers. Weight, 135 pounds. Each .....\$26.00

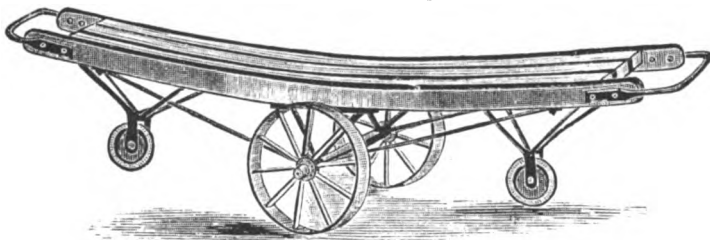
No. D, Tray holding 300 pounds of coal. Weight, 98 pounds. Each.....\$18.00

No. D 2, Tray holding 350 pounds of coal. Weight, 118 pounds. Each .....\$20.00

**Coke or Charcoal Barrow.**

No. E, Tray holding 4 bushels of coke or charcoal, Weight, 126 pounds. Each .....\$28.00

**BAGGAGE BARROW.  
Curved Pattern, Steel Spoke Wheels.**

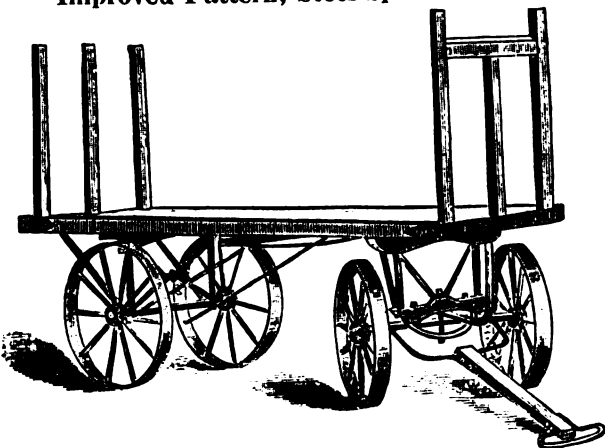


**Fig. 2220.**

No. 1, 9 feet long, 24 inches wide.....each, \$40.00  
" 2, 10 " " 27 " " ..... " 45.00  
" 3, 13 " " 29 " " ..... " 55.00

Furnished with cast iron wheels if desired.

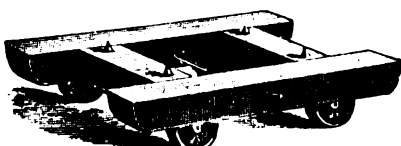
**EXPRESS WAGON.  
Improved Pattern, Steel Spoke Wheels.**



**Fig. 2222.**

10 feet long, 40 inches wide.....each, \$100.00

**BOX TRUCK, FOUR WHEELS.**



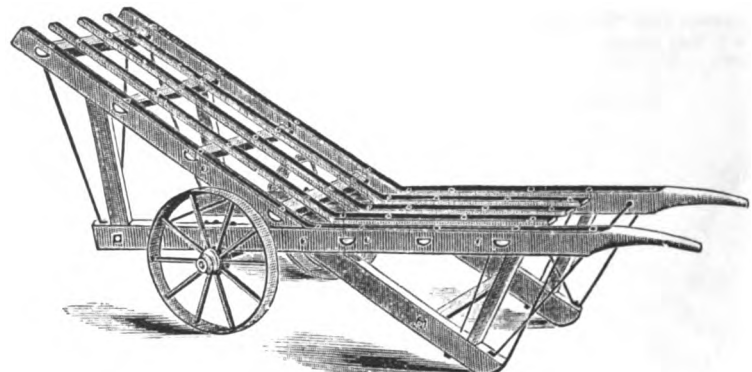
**Fig. 2224.**

**Description, Figs. 2224 and 2225.**

These are strong, low trucks used for handling large boxes or bales. The six wheel truck has wood bolsters between axles and frame, and wheels run under platform. Center wheels are set lower than end wheels, enabling truck to turn easily in any direction without injuring floor.

No. 1, Fig. 2224, 1 foot 6 inches, by 1 foot 6 inches, 4 wheels, each, \$5.00  
" 2, " 2224, 1 " 6 " " 2 " 2 " 4 " " 6.00  
" 11, " 2225, 1 " 6 " " 2 " 0 " 6 " " 8.00

**BAGGAGE BARROW.  
Sloping Back Pattern, Steel Spoke Wheels.**



**Fig. 2221.**

No. 1, 7 feet long, 24 inches wide.....each, \$33.00  
" 2, 9 " " 27 " " ..... " 40.00  
" 3, 10 " " 30 " " ..... " 55.00

Furnished with cast iron wheels if desired.

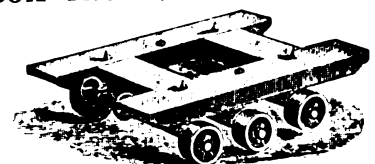
**BAGGAGE WAGON.  
Extra High Dash Frames, Steel Spoke Wheels.**



**Fig. 2223.**

10 feet long, 27 inches wide .....each, \$80.00

**BOX TRUCK, SIX WHEELS.**



**Fig. 2225.**

## WAREHOUSE AND STORE TRUCKS.

## WESTERN PATTERN.

Half Ironed.

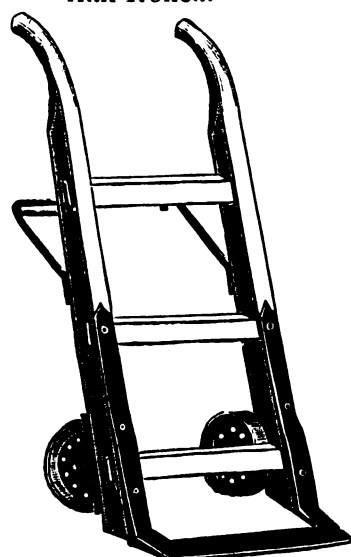


Fig. 2226.

Full Ironed.

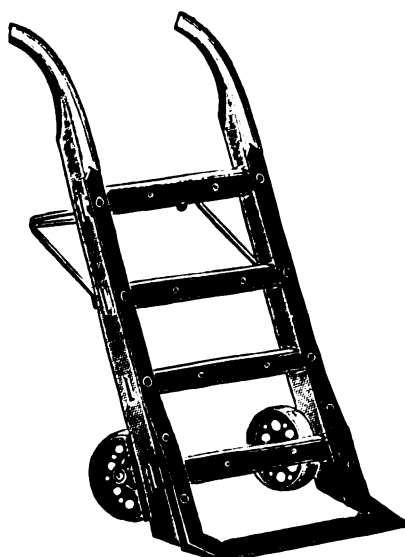


Fig. 2227.

## BOSTON PATTERN.

Half Strapped.

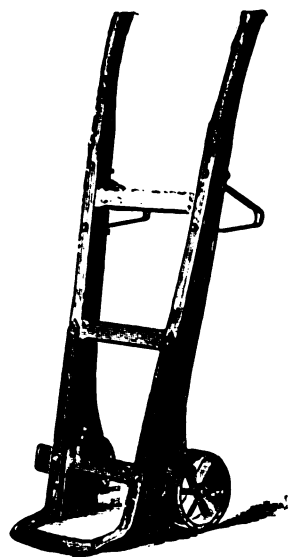


Fig. 2228.

Full Strapped.



Fig. 2229.

Nos.	Length of Handle.	Width.	Diameter of Wheel.	Ironed.	Each.
1	3 feet 11 inches	19 inches	7 inches	Half Ironed	\$ 7.00
1	3 " 11 "	19 "	7 "	Full "	8.00
2	4 " 2 "	20 "	8 "	Half "	9.00
2	4 " 2 "	20 "	8 "	Full "	10.50
3	4 " 6 "	22 "	9 "	Half "	13.00
3	4 " 6 "	22 "	9 "	Full "	15.00

## Hotel Trucks with Rubber Banded Wheels.

Size of corresponding numbers Western Pattern Store Trucks.

No. 1, Half Ironed.	No. 1, Full Ironed.	No. 2, Half Ironed.	No. 2, Full Ironed.
Each... \$10.00	11.00	14.00	15.00

Nos.	Length of Handle.	Width at Nose.	Width at Upper Bar.	Diameter of Wheel.	Strapped.	Each.
1	4 feet 2 ins.	11 3/4 ins.	15 1/4 ins.	7 ins.	Half Strapped	\$ 6.50
1	4 " 2 "	11 3/4 "	15 1/4 "	7 "	Full "	7.50
2	4 " 7 "	14 "	18 "	8 "	Half "	8.50
2	4 " 7 "	14 "	18 "	8 "	Full "	10.00
3	4 " 9 "	14 3/4 "	18 1/4 "	9 "	Half "	11.00
3	4 " 9 "	14 3/4 "	18 1/4 "	9 "	Full "	12.50
4	5 " 6 "	15 "	19 1/4 "	10 3/4 "	Full "	15.50
5	6 " 1 "	15 1/8 "	20 1/4 "	12 "	Full "	18.50
6	6 " 4 "	16 1/4 "	21 7/8 "	12 "	Full "	24.00

## BARREL TRUCK.

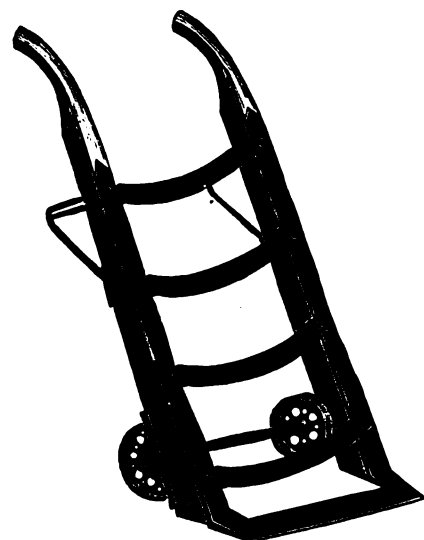


Fig. 2230.

## COTTON TRUCK.



Fig. 2231.

## RAILROAD AND PACKING HOUSE TRUCKS.

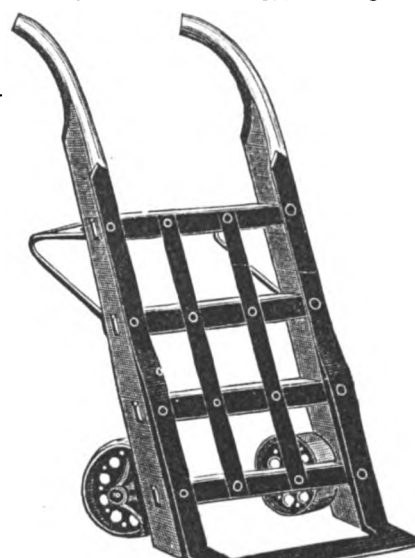


Fig. 2232.

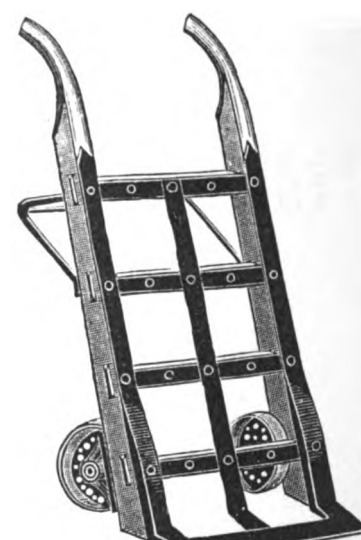


Fig. 2233.

## BAG TRUCK.

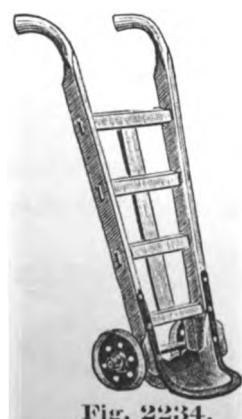


Fig. 2234.

## Prices, Barrel Trucks, Fig. 2230.

Nos.	Kind of Truck.	Length of Handle.	Width.	Diameter of Wheel.	Ironed.	Each.
1	Barrel	3 feet 11 inches	19 inches	6 inches	Full Ironed	\$ 9.00
2	"	4 " 2 "	20 "	7 3/4 "	"	11.00
3	"	4 " 6 "	22 "	8 5/8 "	"	16.00
2C	Cheese	4 " 6 "	16 "	7 1/2 "	"	12.00

Barrel and Cheese Trucks made Boston Pattern when so ordered.

## Price, Cotton Truck, Fig. 2231.

No. 4, Length of handle, 5 feet 2 inches; width at nose and upper cross bar, 24 inches; wheels, 14 inches diameter, 2 1/2 inch tread. Heavily ironed, fenders over wheels.....each, \$22.00

## Prices, Railroad Trucks, Figs. 2232 and 2233.

Extra heavy. Full ironed. Handle and cross straps bolted through handles.

Nos.	Length of Handle.	Width.	Diameter of Wheel.	Each.
4.....Fig. 2232	5 feet	24 inches	10 3/4 inches	\$20.00
4 Extra, " 2233	5 "	24 "	10 3/4 "	22.00

## Price, Bag Truck, Fig. 2234.

Bent plow handles. Length of handles, 42 inches; width at nose, 11 inches; width at upper cross bar, 17 inches. Weight, 25 lbs.....each, \$5.00

## Price, Columbus Truck, Fig. 2235.

Bent plow handles. Length of handles, 43 inches; width at nose, 12 inches; width at upper cross bar, 18 inches. Weight, 28 lbs.....each, \$5.00

## COLUMBUS TRUCK.



Fig. 2235.



TRUCKS AND CARTS.

BACON OR HAM TRUCK.

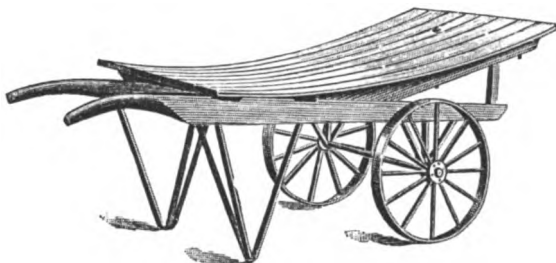


Fig. 2236.

Length of Truck, 6 feet 5 inches; length of axle, 2 feet 10 inches. With patent steel spoke wheels, diameter 20 inches, or cast iron wheels if preferred. Each.....\$25.00

DRY GOODS, CARPET OR LEATHER TRUCK,  
Light Pattern.

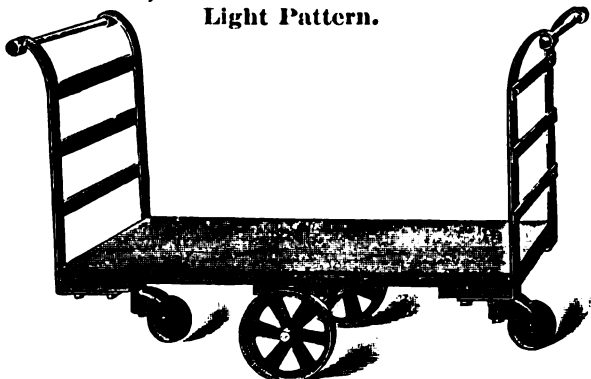


Fig. 2238.

No. 1, Platform, 24x42 inches.....each, \$18.00  
" 2, " 27x45 "....." 21.00

These Trucks have end racks 27 inches high; cast iron wheels, 21x8 inches. Special sizes made to order. These Trucks made without end racks for baskets, etc., when desired.

WAGON TRUCK.

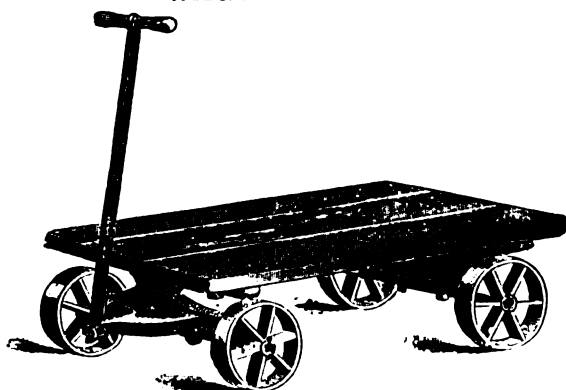


Fig. 2240.

No. 1, Platform, 3 feet	0 inches	x 2 feet	0 inches,	plain top.....each, \$14.00
" 2, " 3 " 2 "	x 2 "	2 "	" " " 15.00	
" 3, " 3 " 4 "	x 2 "	4 "	" " " 16.00	
" 4, " 3 " 6 "	x 2 "	6 "	" " " 17.50	
" 5, " 3 " 8 "	x 2 "	8 "	" " " 18.50	
" 6, " 3 " 10 "	x 2 "	10 "	" " " 20.00	

HAND PUSH CART.

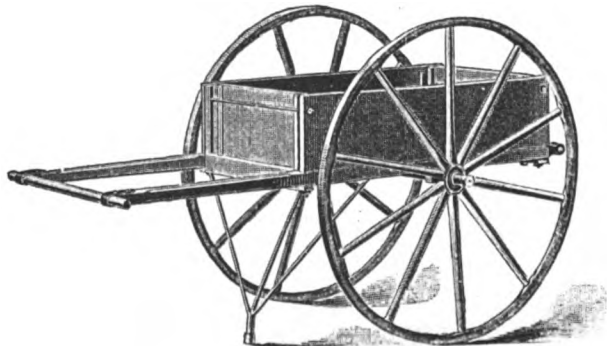


Fig. 2242.

No. 1, Length of body, 40 inches; width, 24 inches; depth, 10 inches. Length over all, 72 inches; width, 37 inches. Weight, 113 lbs. Wheels, 44 inches diameter; tires, 1 1/4 x 1/8 inch.....each, \$28.00  
No. 2, Length of body, 51 inches; width, 40 inches; depth, 10 inches. Length over all, 84 inches; width, 53 inches. Weight, 130 lbs. Wheels, 44 inches diameter; tires, 1 1/4 x 1/8 inch.....each, \$30.00

TRUNK CARRIER.

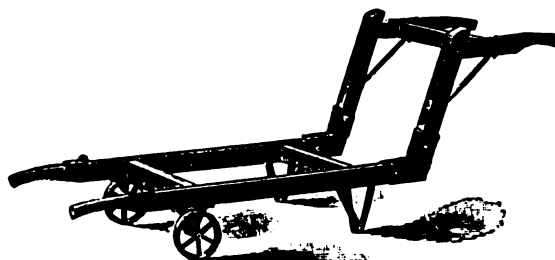


Fig. 2237.

Made with rubber banded wheels, for carrying trunks, boxes, etc., up or down stairs or steps. Very convenient for hotels, colleges, etc. Size, 21 inches wide by 72 inches long; height, 8 inches; weight, 40 lbs.....each, \$20.00

DRY GOODS, CARPET OR LEATHER TRUCK,  
Heavy Pattern.

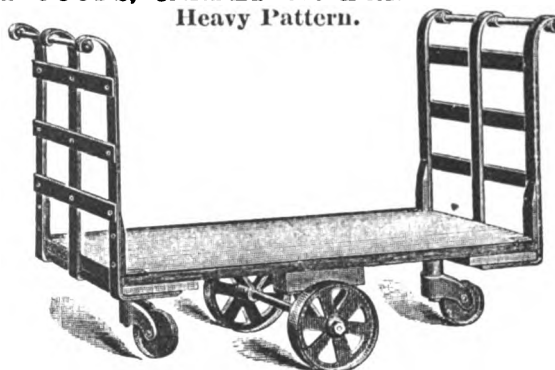


Fig. 2239.

No. 11, Platform, 24x42 inches.....each, \$22.00  
" 12, " 27x45 "....." 25.00

GRAIN AND MEAT WAGON.

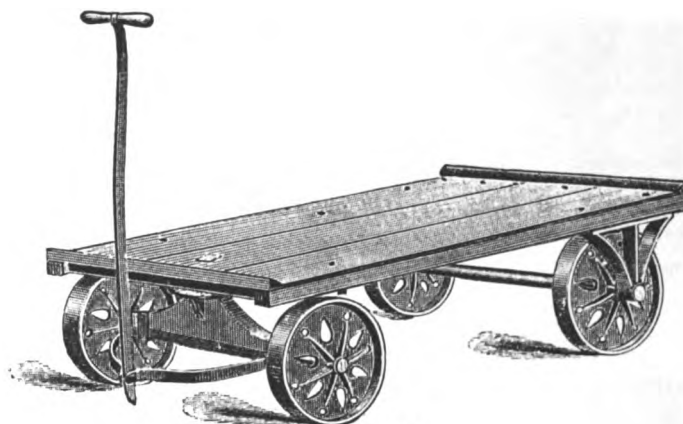


Fig. 2241.

Extra Heavy. Fifth Wheel.

No. 7, Platform, 3 feet x 5 feet, 11 inch wheels.....each, \$20.00  
" 8, " 3 " x 5 " 14 " "....." 35.00

CONTRACTOR'S RAILROAD CART,  
Iron Axles.

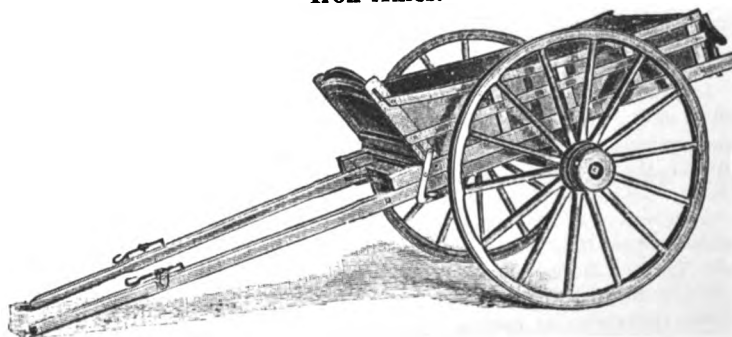


Fig. 2243.

The above cart is used largely by railroad and city contractors, and is very strong and well built. Each.....\$75.00

I furnish also all styles of donkey, mule, horse or ox carts for either domestic or export trade. Full description and prices on application.

## COAL AND COKE CARS.

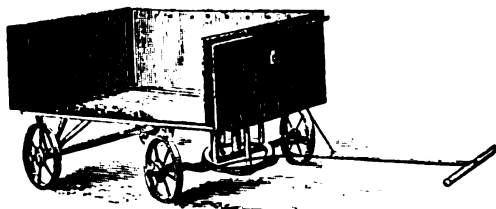
COAL OR COKE CAR.  
Side Open.

Fig. 2244.

This style of Coal or Coke Car of any desired size, either open, as shown in cut, or with side piece hinged at bottom to let down and form a platform over which the contents of car may be shoveled out. Used very extensively in gas and chemical works.

Prices on application.

COAL OR COKE CAR.

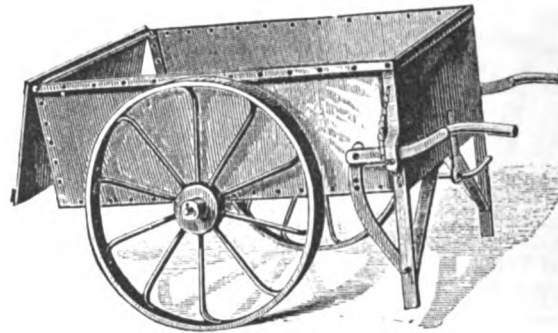


Fig. 2245.

This style of car is much used in coal yards, factories and guano works.

Box of Car, 4 feet long, 2 feet deep, 2 feet 8 inches wide.....	each, \$65.00
" " 5 " 2 " 3 " wide.....	" 72.00
" " 6 " 2 " 3 " ".....	" 80.00

Special sizes made to order when desired. Prices on application.

BOTTOM DUMPING COAL CAR.

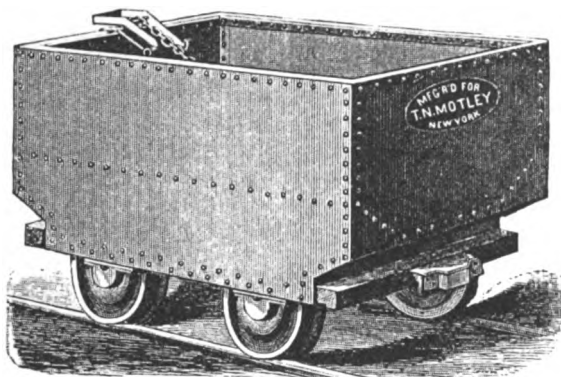


Fig. 2246.

This improved Bottom Dumping Coal Car is intended for use on overhead railways. The doors are arranged to open in such a manner that they are clear of the track when open, thus giving the coal free exit. The body of car is made of steel. In ordering state width of track.

Prices of any desired size on application.

IMPROVED COAL CAR.

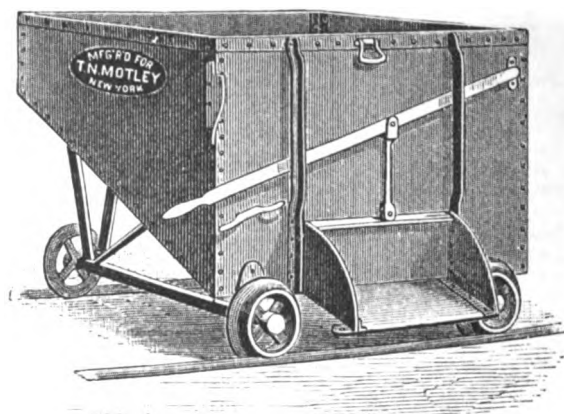


Fig. 2247.

This Car is intended for use on coal docks, etc. It is constructed with beveled bottom and a sliding door, made to raise and allow the coal or other substance to slide out and run down a chute. Made with door at end or side as desired.

Nos.	Capacity.	Each.	Nos.	Capacity.	Each.
1	1½ ton of coal.	\$120.00	3	1 ton of coal.	\$160.00
2	1500 lbs. of coal.	135.00	4	2 " "	225.00

BOTTOM DUMPING COAL CAR.

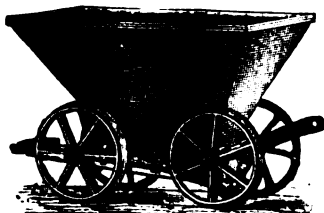


Fig. 2248.

This Car is made of No. 10 sheet iron, bottom of ¼ inch iron, well braced and hinged on axle, as shown in cut. The lever in front is the lock which holds the bottom in place. When dumping the lever is lifted, or otherwise a piece of wood is placed upon the track where it is required to dump the load. The car is pushed against it, which raises the lever, and the coal falls down between the track. In closing, the operator places his weight upon the small platform, and the lock will close until released again.

Prices.

No. 1, holding 1 ton.....	each, \$150.00
" 2, holding 2 tons.....	" 175.00

When ordering any of above cars be particular to state gauge of track, dimensions of body or capacity cars are required to hold, dimensions of trucks, etc.

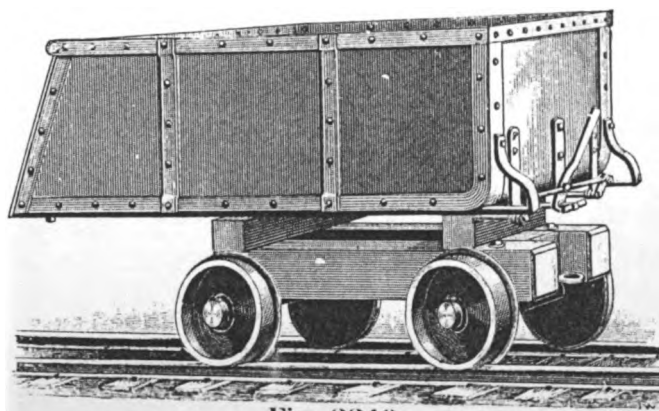
STEEL MINING CAR.  
Dumps either Side or End.

Fig. 2249.

The body of this Car is steel, and the frame of best seasoned oak timber. It has self-oiling journals, and dumps at either side or end. Made any size and width of gauge required.

Prices on application.

SIDE DUMPING COAL CAR.

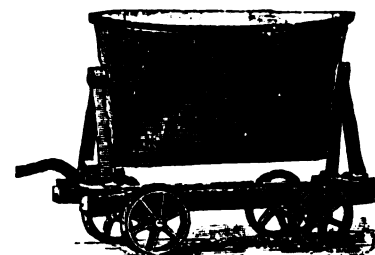


Fig. 2250.

This Car is made wholly of iron, with the exception of the frame, which is of the best oak timber. Body made of No. 10 sheet iron, axles from 15½ to 21½ inch round iron. The journal bearings are perfectly round and smooth, and are provided with holes for receiving oil. The short lever in front is the lock which keeps the body in an upright position. By raising the lever at its free end the load will dump on either side at will of the operator.

Prices.

No. 1, holding 1 ton.....	each, \$150.00
" 1½, holding 1½ tons.....	" 175.00
" 2, holding 2 tons.....	" 225.00

# CONTRACTORS' DUMP CARS.

## CONTRACTORS' SMALL DUMP CARS.

No. 1, Side View.

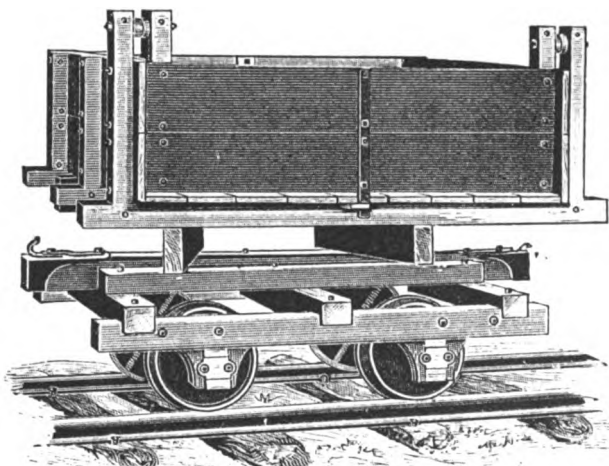


Fig. 2251.

No. 1, End View Dumping.

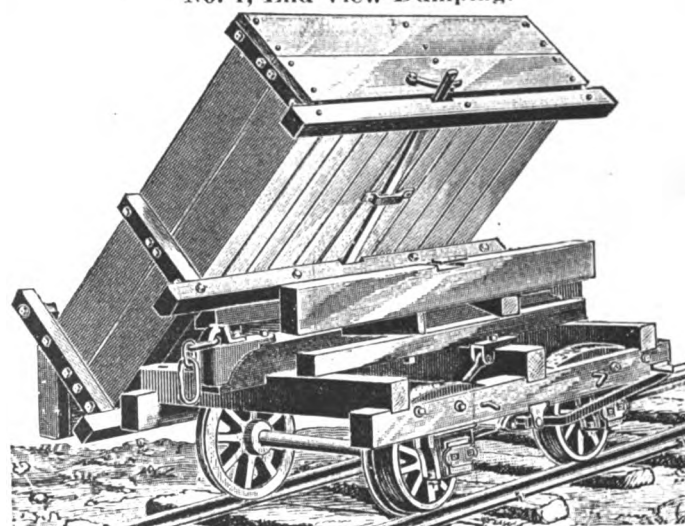


Fig. 2252.

These cars are especially adapted either in trains or singly, as amount of work may require, to team hauling, in grading, coal and ore shifting, quarry and brick yard work, lime and cement kilns, gravel pits, dock and levee building, etc.

The small car as shown above, rests upon four chilled wheels, 16 inches in diameter, fitted on  $2\frac{1}{4}$  inch axles, journals outside, and the gauge is 30 inches. The boxes, pedestals, brasses, bumpers and springs are all strictly first class. The frame is very strong and substantial, being built of  $4 \times 5$  inch white oak timber. The body and floor are made from  $1\frac{1}{4}$  inch white oak plank.

No. 1, Gauge, 30 inches; capacity,  $1\frac{1}{2}$  cubic yards; length, 5 feet; width, 5 feet; depth, 16 inches; height above rails, 48 inches.....each, \$67.00

## STEAM SHOVEL CAR No. 3.

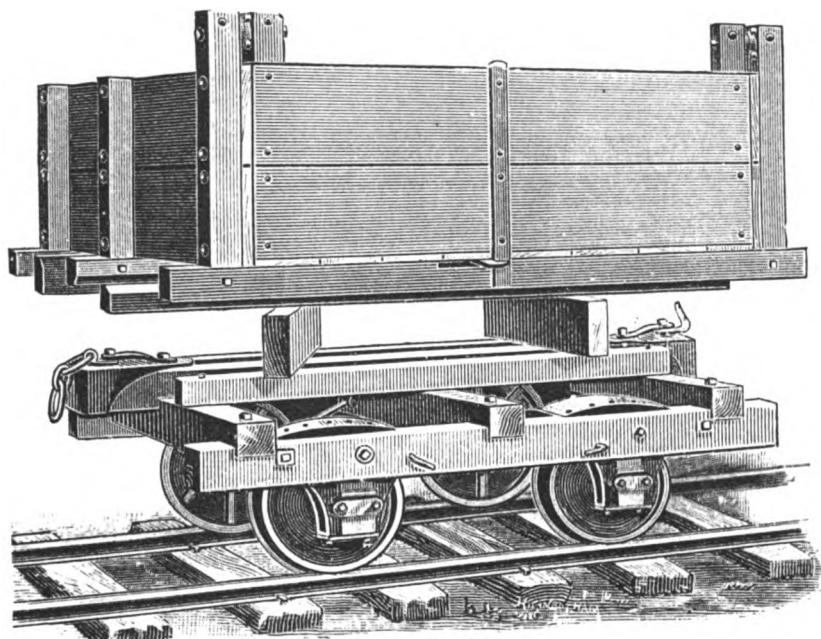


Fig. 2253.

These Steam Shovel Cars are built of the best materials only, and constructed for durability and simplicity. There are no elaborate and delicate castings to break or wear out, and the dumping hinge is simple and so easily replaced that the blacksmith on the work can make needed repair. They are the strongest, simplest, most effective, and best cars made. Wheels are 20 inches in diameter, fitted on  $2\frac{3}{4}$  inch axles. The journals are on the outside, and the boxes, pedestals, brasses, bumpers, springs, etc., are all strictly first class. The frame is very strong, being built of  $6 \times 6$  inch white oak timber; the body and floor are made of  $1\frac{1}{2}$  inch white oak plank.

No.	Gauge.	Capacity.	Length.	Width.	Depth.	Each.
2	36 ins.	$2\frac{1}{2}$ cu. yds.	6 ft.	6 ft.	2 ft.	\$100.00
3	38 "	$2\frac{1}{2}$ "	6 "	6 "	2 "	100.00

## ROTARY OR UNIVERSAL DUMPING CAR.

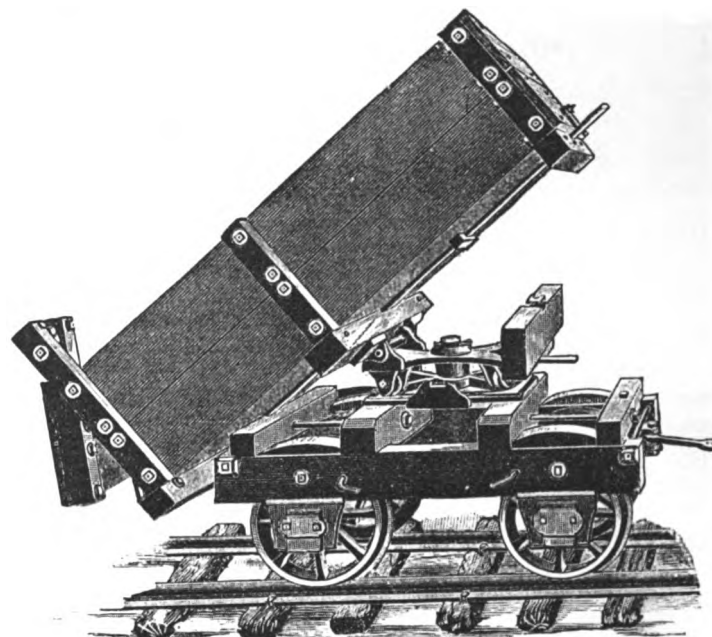


Fig. 2254.

These Cars made in the same substantial manner as the Nos. 1, 2 and 3, with the body mounted on a patent rotary frame, allowing cars to be dumped from either side or end as desired. The wheel base of No. 4 car is 30 inches, and height of car from rail, only 47 inches.

No. 4,	Gauge, 30 inches;	capacity, $1\frac{1}{2}$ yards	.....	each, \$	80.00
" 4A,	" 36 "	" $1\frac{1}{2}$ "	.....	"	85.00
" 5,	" 36 "	" $2\frac{1}{2}$ "	.....	"	120.00
" 6,	" 38 "	" $2\frac{1}{2}$ "	.....	"	120.00

## Brakes.

Brakes for any of the cars on this page extra.

Per car.....\$10.00

All parts of these Contractors' Cars are interchangeable, and can be duplicated should they break or wear out.

## RAILROAD CARS.

## SKELETON PUSH CAR.

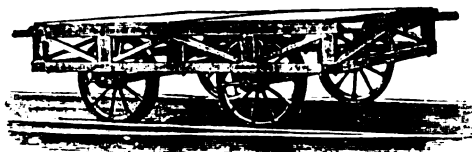


Fig. 2255.

## Price, Skeleton Push Car, Fig. 2255.

Built with 20 inch wrought iron spoke wheels. Average weight of car complete, 640 lbs. These cars are very light and strong, and will carry considerable of a load.

Platform, 7 feet 9 inches by 5 feet 11 inches.....each, \$75.00

## HAND CAR.

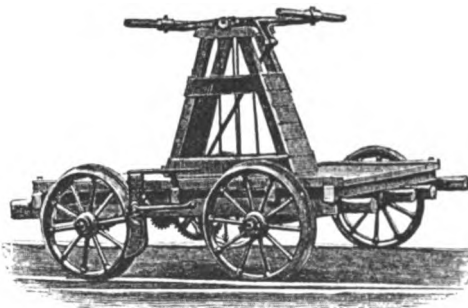


Fig. 2256.

## Prices, Hand Cars, Fig. 2256.

No. 1, with 20 inch wrought iron spoke wheels and brass bearings. Average weight, complete, 585 lbs. These cars are built of the best quality of tough young white oak, accurately framed, bolted and trussed.

Each .....\$70.00

No. 2, Crank Car, with 30 inch wheels of same general style as No. 1, but stronger and with tool box on platform.

Each .....\$85.00

## LIGHT PUSH CAR.

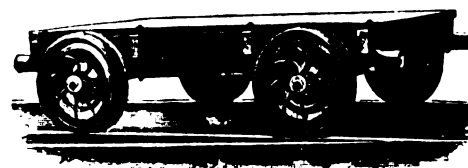


Fig. 2257.

## Price, Light Push Car, Fig. 2257.

This car has light 20 inch single plate wheels. Average weight of car, 730 lbs. It is well built and very strong.

Platform, 5 feet 4 inches by 7 feet 8 inches.....each, \$65.00

## HEAVY PUSH OR RUBBLE CAR.

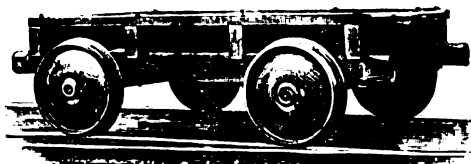


Fig. 2258.

This car has double plate 20 inch wheels, and is built for carrying a heavy load of rails. It is fitted with an iron roller at each end to be used in loading rails. It is well built and strong. Weight, 1200 lbs.

Platform, 7 feet 8 inches by 5 feet 4 inches..... each, \$80.00

## DERRICK OR WRECKING CAR.

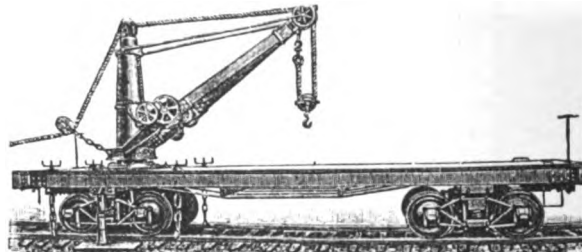


Fig. 2259.

This car has been designed especially for the purpose, and is well built of the best of material. The derrick is very powerful and easily operated.

Photographs showing improvements recently made and full information furnished on application.

## BOX FREIGHT CAR.

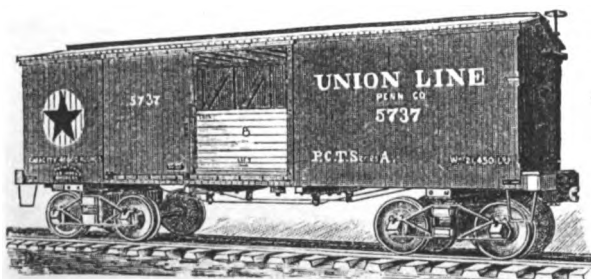


Fig. 2260.

Freight Cars, both new and second hand. All kinds, Box, Cattle, Gondola, Coal, etc. Estimates, according to kind desired, furnished on application.

## PASSENGER CAR.

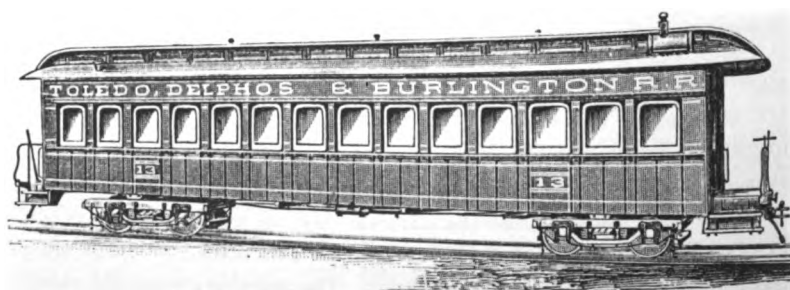


Fig. 2261.

Passenger Cars, both new and second hand, Horse Cars, Cable Cars, Electric Cars. Estimates, according to styles desired, furnished on application.

## CAR BUILDERS' MATERIAL.

Special prices quoted on all iron work and other fittings used in the construction of freight and passenger cars.

## CARS, LOCOMOTIVES AND RAILS.

### PLANTATION OR CANE CARS, TWO AND FOUR WHEELS.

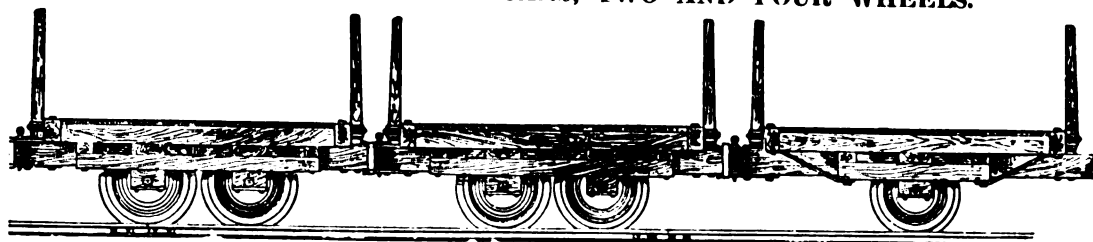


Fig. 2262.

Light cars for plantation and logging use, built to required size and gauge. Specifications and special prices furnished on application.

### LOCOMOTIVE AND TURN TABLE.

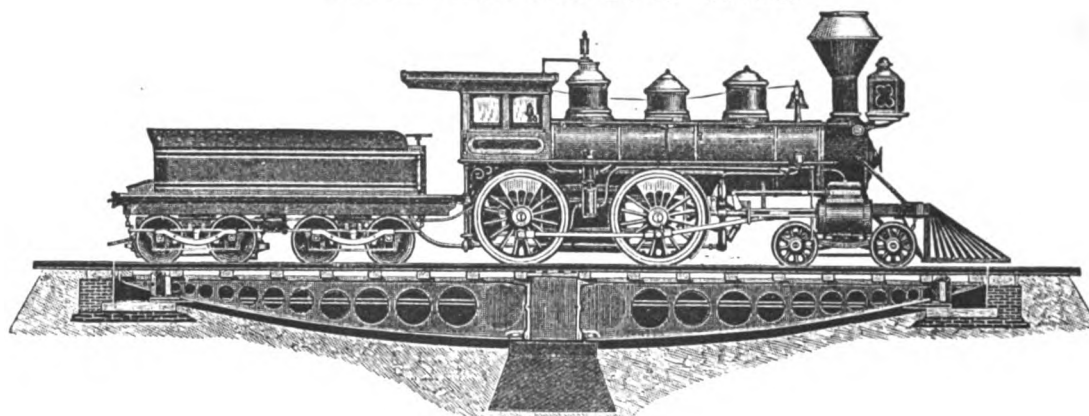


Fig. 2263.

### LOCOMOTIVES.

American Type, Mogul or Consolidation Type, either standard or narrow gauge, both new and second hand. Specifications and special prices furnished on application.

### LIGHT LOCOMOTIVES.

The size and style of locomotives for any special service can be only be decided by the requirements of work to be performed. Those in use for logging and mining purposes and by contractors, are mainly of the "Saddle Tank" type, i. e. with the water tank over or on side of the boiler and with no tender, the weight being either all on the driving wheels or distributed over them and also over a forward or back two wheeled truck, or over both. These machines are made from 7000 lbs. weight to 50,000 lbs. weight, and with cylinders varying from 5 inches by 10 inches to 14 inches by 20 inches. The 9 inch by 14 inch cylinder, weighing about 10 tons, is the most popular for general light service.

Specifications and special prices furnished on application.

### TURN TABLE.

Turn tables with cast iron, wrought iron or wood frames, complete for putting in position. Specifications and special prices furnished on application.

### PATENT PORTABLE RAILROAD TRACK, For Contractors, Planters, etc.

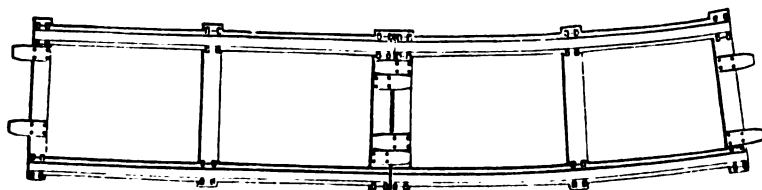


Fig. 2264.

This Portable Railroad is intended for contractors, store houses, coal mines, brick yards, sugar plantations, etc. It is built entirely of wrought iron in sections of any suitable length, generally 10 feet. The rails are of iron made in the usual form employed for railways; the cross pieces consist of T or flat iron bars, the rails being secured to the cross pieces by means of square rivets of the shape of hook spikes; these square rivets prevent the sections from changing their original shape, and thereby always secure a good fit of one section to another. The ends of each section are provided with projecting locking pieces which are arranged so as to articulate with those on the end of the next section; these locking pieces being riveted to the upper surface of the cross pieces, are free to slide in endwise and secure the sections from lateral motion when they are placed in position, end to end.

Estimates furnished on application.

### IRON OR STEEL T RAIL.

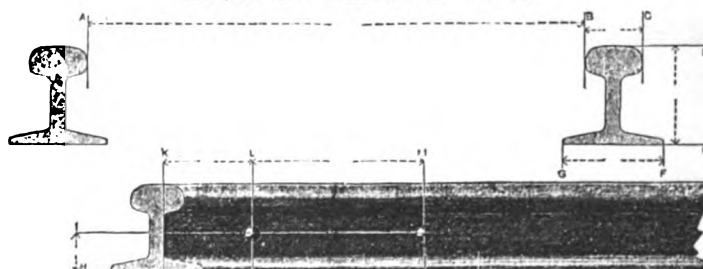


Fig. 2265.

Iron rails..... per ton, \$ Steel rails..... per ton, \$  
Prices on application.

To ascertain the number of tons (of 2240 lbs.) of rails required for one mile of single track, divide the weight per yard by 7 and multiply it by 11, thus: For 56 lb. rails, divide 56 by 7, equals 8, multiplied by 11, equals 88 tons.

### Street Rails

Made in a variety of patterns according to the system of laying same. Strap or Flat Street Rails. Side Bearing Street Rails. Center Bearing Street Rails. Prices on application.

### Measurements required for set of Switch Fixtures.

A—B, Gauge of track.	B—C, Head of rail.
D—E, Height of rail.	F—G, Base of rail.
H—I, Center of holes from bottom of rail.	K—L, Center of first hole from end of rail.
L—M, Center to center of holes.	Diameter of bolt.



## SWITCH ATTACHMENTS AND FROGS.

### STUB SWITCH ATTACHMENTS.

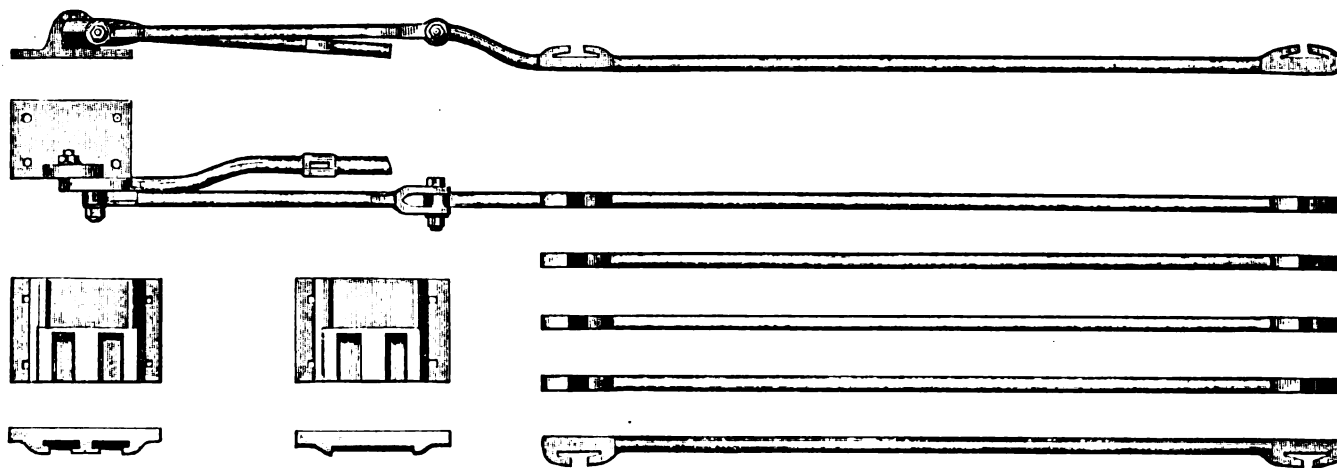


Fig. 2266.

When ordering Stub Switch Attachments, give measurements as indicated on page 263.

Prices on application.

### YÖKE FROG.

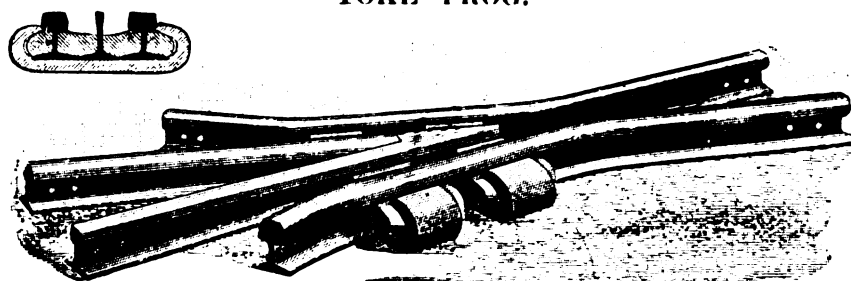


Fig. 2267.

The peculiar features of this Frog are: First, the reinforcing of the yoke at the bend, which makes this the strongest part of the yoke. Second, the shrinking of the yoke on to the frog, making the strongest possible fastening. Prices on application.

### BOLTED FROG.

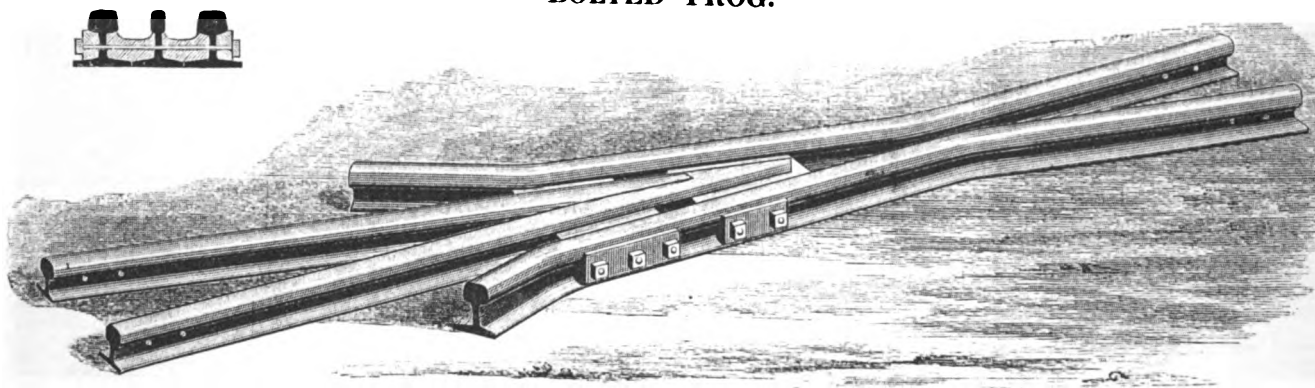


Fig. 2268.

Prices on application.

### SPRING RAIL FROG.

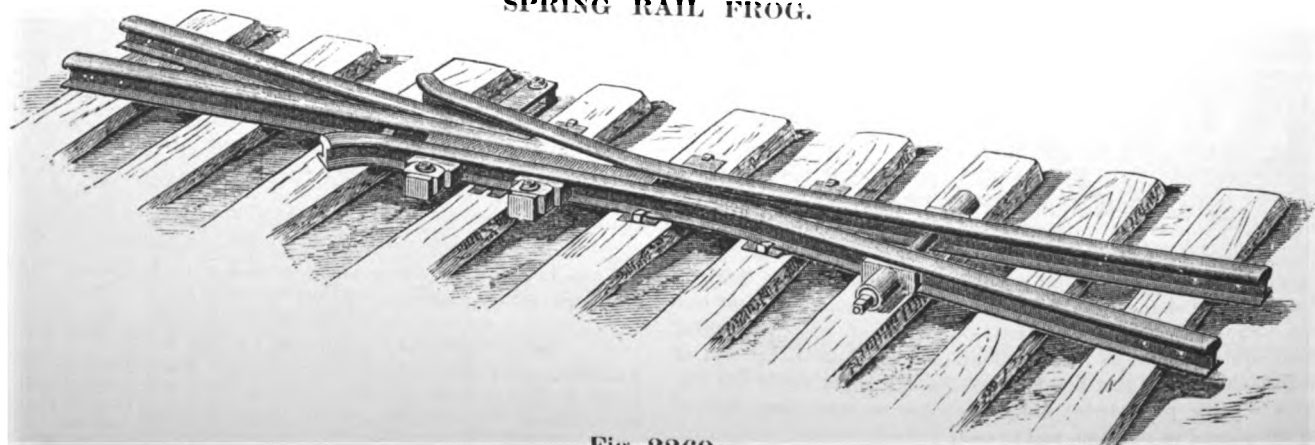


Fig. 2269.

Prices on application.

Special prices quoted on Frogs of any style desired. In ordering Frogs, give the angle and length of frog, pattern of rail, and position of holes for fish plates.

## CROSSING AND SWITCH STANDS.

## SQUARE BOLTED CROSSING.

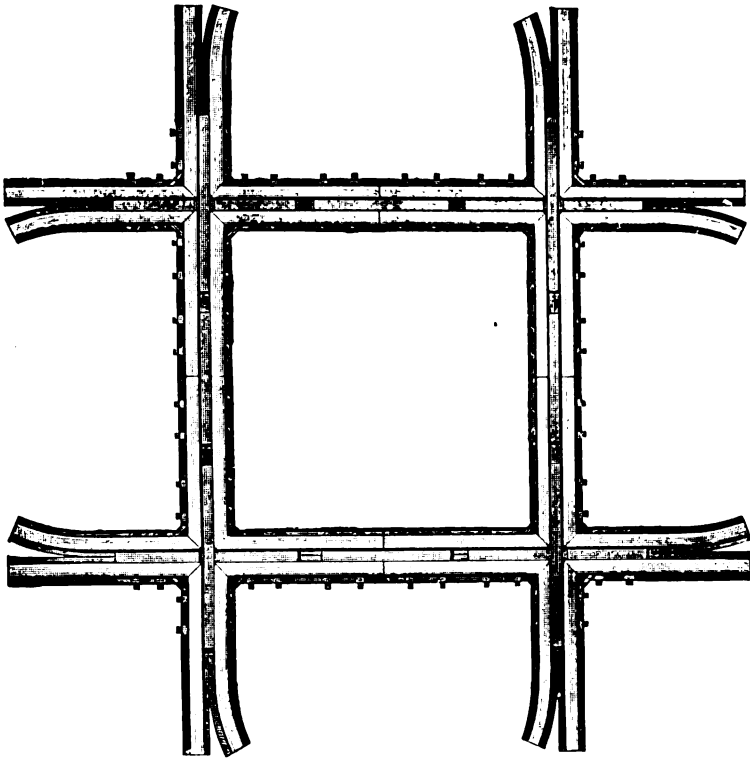


Fig. 2270.

For crossings where the angle is nearly a right angle, or between  $65^{\circ}$  and  $90^{\circ}$ , the pattern shown above is well adapted to secure excellent results. The construction is simple and very substantial, and as durable as can be made in such angles.

Prices on application.

## SQUARE PLATE CROSSING OR DIAMOND CROSSING.

The rails in these crossings are mounted on strong wrought iron bed plates, otherwise they are of same general construction as the Square Bolted Crossings.

Prices on application.

## HARP SWITCH STAND.

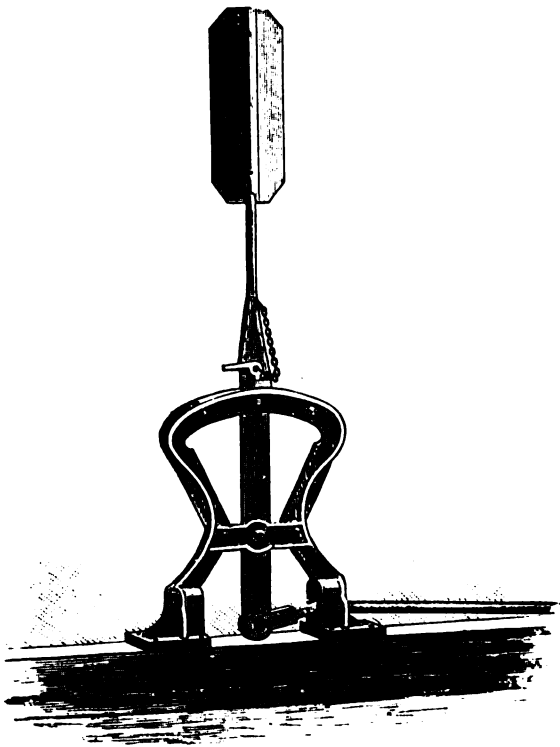


Fig. 2272.

Prices on application.

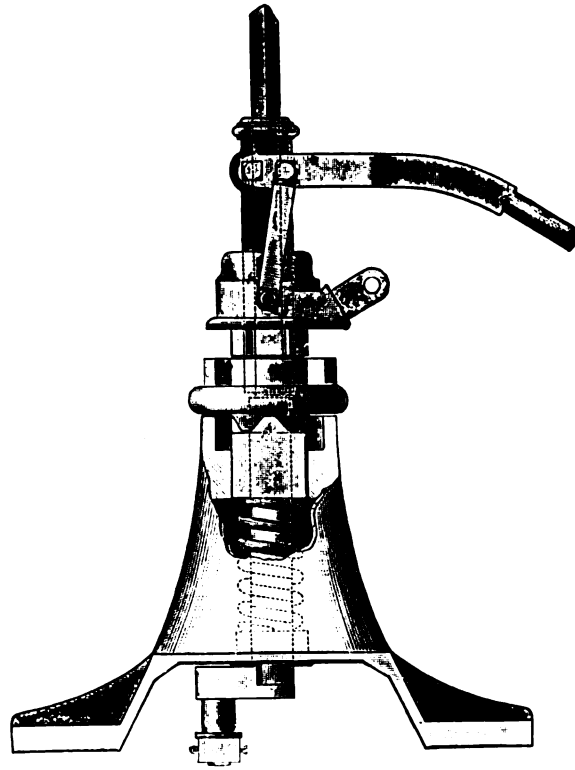
AUTOMATIC SAFETY SWITCH STAND.  
For Two Ties.

Fig. 2271.

Furnished for two ties, as shown in above cut, or for one tie when so desired.

Prices on application.

## Description Automatic Safety Switch Stands.

Figs. 2271 and 2273.

The construction of the Automatic Switch Stand is such that it is impossible to lower the lever or lock the stand unless the switch is fully thrown, one of the point rails being always in its proper position against the stock rail for main line or siding, as the case may be. When the switch is thus set and locked the first pair of wheels running through in the wrong direction will throw the points, cause the targets on the stand to revolve, and will securely lock both switch and stand in their new position.

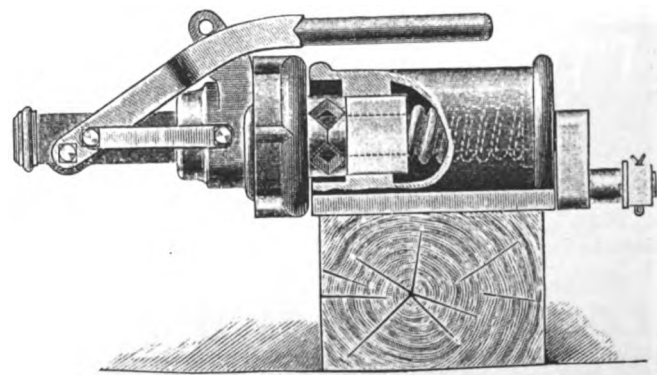
AUTOMATIC SAFETY SWITCH STAND.  
For Yard Use.

Fig. 2273.

Prices on application.

## TACKLE BLOCKS.

## ROPE STRAPPED BLOCKS.

SINGLE. DOUBLE. TRIPLE.



Fig. 2274.



Fig. 2275.



Fig. 2276.

## INSIDE IRON STRAPPED BLOCKS.

SINGLE. DOUBLE. TRIPLE.



Fig. 2277.



Fig. 2278.



Fig. 2279.

## INSIDE IRON STRAPPED BLOCKS.

SINGLE. DOUBLE. TRIPLE.



Fig. 2280.



Fig. 2281.



Fig. 2282.

All of these Blocks are made with improved steel pins. Furnished with Lignumvitæ or Iron Sheaves, as ordered.

## Prices, Rope Strapped, Figs. 2274 to 2276.

DIMENSIONS.			COMMON IRON BUSHED.			PATENT ROLLER BUSHED.		
Sheaves. Size, Inches.	For Rope. Diameter, Inches.	Shells. Length, Inches.	Single. Each.	Double. Each.	Triple. Each.	Single. Each.	Double. Each.	Triple. Each.
1 3/4 x 1 1/2	3/8	3	\$0.55	\$0.95	\$1.45	\$0.90	\$1.75	\$2.50
2 x 1 1/2	3/8	3 1/2	.60	1.00	1.50	1.00	1.85	2.75
2 1/4 x 5/8	1/2	4	.65	1.15	1.75	1.10	2.00	3.00
3 x 3/4	5/8	5	.75	1.45	2.00	1.20	2.30	3.30
3 1/2 x 1	3/4	6	.95	1.75	2.60	1.45	2.75	4.00
4 1/4 x 1 1/8	7/8	7	1.15	2.15	3.15	1.65	3.20	4.60
4 3/4 x 1 1/8	1	8	1.40	2.60	3.75	2.10	3.85	5.50
5 1/2 x 1 1/8	1	9	1.65	3.15	4.25	2.50	4.50	6.75
6 1/4 x 1 1/4	1 1/8	10	2.20	3.95	5.00	3.15	5.75	8.00
7 1/4 x 1 1/4	1 1/8	11	2.60	4.75	6.50	3.75	6.75	9.50
8 x 1 3/8	1 1/4	12	3.00	5.50	7.50	4.25	7.50	11.00
9 x 1 1/2	1 1/4	13	3.50	6.25	9.00	5.00	8.50	12.75
9 1/2 x 1 5/8	1 3/8	14	4.00	7.00	10.50	5.50	10.00	14.50
10 x 1 5/8	1 1/2	15						
11 x 1 5/8	1 5/8	16						

## Prices, Inside Iron Strapped, Figs. 2277 to 2282.

COMMON IRON BUSHED.			PATENT ROLLER BUSHED.		
Single. Each.	Double. Each.	Triple. Each.	Single. Each.	Double. Each.	Triple. Each.
\$0.70	\$1.30	\$1.75	\$1.10	\$2.00	\$2.90
.75	1.45	2.00	1.15	2.20	3.15
.85	1.60	2.15	1.20	2.25	3.25
.90	1.75	2.25	1.25	2.35	3.50
1.10	2.00	2.90	1.50	2.85	4.40
1.30	2.40	3.50	1.70	3.35	5.00
1.65	2.85	4.25	2.25	4.15	6.00
1.85	3.40	4.75	2.50	4.70	7.25
2.50	4.25	5.50	3.30	5.80	8.50
2.85	5.00	6.75	3.85	7.00	10.00
3.25	5.85	8.00	4.25	7.75	11.50
3.75	6.50	9.25	5.00	8.50	13.25
4.25	7.25	10.75	5.50	9.75	15.00
5.00	8.50	12.50	6.25	11.00	17.00
6.25	10.50	15.00	7.75	13.00	20.00

For Blocks with Mortise wider than above, add 10 per cent. to list for each extra 1/4 inch or fraction thereof. For Galvanizing Straps, add 10 per cent. to list.

## INSIDE IRON STRAPPED BLOCKS.

WITH EYE FOR GAFF. WITH SHACKLE.



Fig. 2283.

WITH LOOSE SWIVEL HOOK.



Fig. 2284.

WITH EYE AND THIMBLE.

## HEAVY TACKLE, THICK MORTISE BLOCKS.

Extra Heavy Inside Iron Straps and Hooks. Cheeks Edge Bolted.

SINGLE. DOUBLE. TRIPLE.

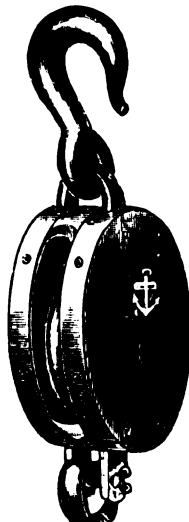


Fig. 2287.

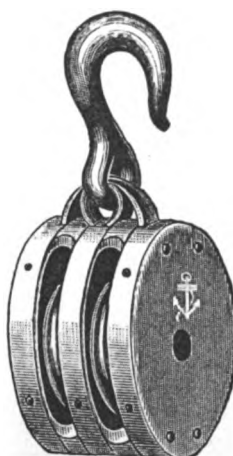


Fig. 2288.

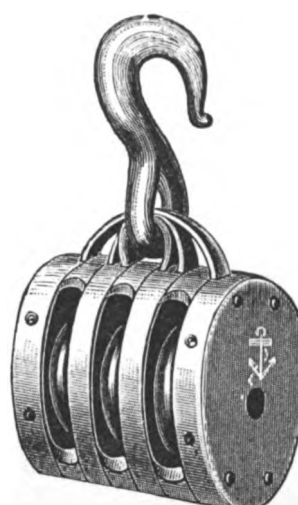


Fig. 2289.

These blocks are furnished with common loose hooks, rings or shackles Lignumvitæ or Iron Sheaves.

DIMENSIONS.			COMMON IRON BUSHED.			PAT. ROLLER BUSHED.		
Sheaves. Inches.	For Rope. Diam. Ins. Inches.	Shells. Length, Inches.	Single. Each.	Double. Each.	Triple. Each.	Single. Each.	Double. Each.	Triple. Each.
4 1/4 x 1 1/8	1	7	\$2.25	\$4.00	\$5.50	\$3.00	\$5.25	\$7.50
4 3/4 x 1 3/8	1 1/8	8	2.40	4.50	6.30	3.25	6.00	8.50
5 3/8 x 1 3/8	1 1/8	9	2.70	5.00	7.25	3.60	6.75	9.00
6 1/4 x 1 1/2	1 1/4	10	3.30	5.80	8.50	4.35	8.00	11.50
7 x 1 1/2	1 1/4	11	3.80	6.80	10.00	5.00	9.25	13.00
8 x 1 5/8	1 1/2	12	4.50	8.00	11.50	6.00	10.50	15.00
9 x 1 3/4	1 1/2	13	5.00	9.00	12.75	6.75	12.00	17.00
9 1/2 x 1 7/8	1 3/4	14	5.75	10.50	14.00	7.50	13.50	19.00
10 x 1 7/8	1 3/4	15	7.25	12.00	17.00	9.00	15.25	21.00
11 x 2 1/8	2	16	9.00	16.50	24.00	10.75	19.50	29.00
12 x 2 3/8	2 1/4	18	15.00	29.00	37.00	18.00	35.00	46.00
14 x 2 7/8	2 1/2	20	21.00	37.00	48.00	25.00	45.00	60.00
15 x 3 3/8	3	22	26.00	48.00	65.00			
16 x 3 7/8	3 1/2	24	32.00	56.00	80.00			

Prices, Figs. 2283, 2284 & 2286.  
Same as Figs. 2277 to 2282.

## Prices, Fig. 2285.

Add to list of Figs. 2277 to 2282 for swivel hooks as below.

Size hook, inches, 7/8 and under	1
Add to list, each ..	\$0.50 .60
Size hook, ins., 1 1/8 1 1/4 1 3/8 1 1/2	
Add to list, each, \$0.75 .90 1.20 1.75	
Size hook, ins., 1 5/8 1 3/4 1 7/8 2	
Add to list, each, \$2.50 3.00 3.25 3.50	

## INSIDE IRON STRAPPED BLOCKS.

WITH STIFF FRONT HOOK. WITH SWIVEL EYE.



Fig. 2290.

WITH MATCH HOOK.



Fig. 2291.

WITH STIFF SWIVEL HOOK.



Fig. 2285.



Fig. 2286.



Fig. 2292.



Fig. 2293.

Prices, Figs. 2290 and 2291.  
Same as Figs. 2277 to 2282.Prices, Figs. 2292 and 2293.  
Same as Figs. 2277 to 2282.

## Blocks with Swivel Jaws.

Add to list of Figs. 2277 to 2282.

Shell, inches, 5	6	7
Add each....	\$1.00 1.25 1.50	
Shell, inches, 8	9	10
Add each....	\$1.75 2.00 2.25	

THORNTON N. MOTLEY, NEW YORK.

## TACKLE BLOCKS, DOCK BLOCKS AND SHEAVES.

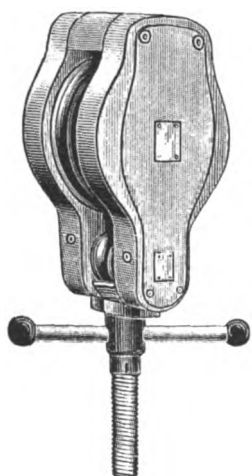
WOOD SHELL DOCK  
BLOCK.

Fig. 2294.

Lignumvita Sheaves or Iron  
Sheaves.

Length of Blocks. Inches.	Width of Mortise. Inches.	For Rope, Diam. Inches.	Steel Roller, Bush. Each.	Bronze Self-Lub., Bush. Each.
10	1 1/2	1	\$ 9.00	\$ 9.50
12	1 5/8	1 1/8	10.00	11.00
14	1 3/4	1 1/4	11.00	12.00
16	2	1 1/2	14.00	15.00
20	2 1/4	2	22.00	23.00

MALLEABLE IRON TACKLE BLOCKS.  
Single. Double. Triple.

Fig. 2295.



Fig. 2296.



Fig. 2297.

These Malleable Iron Blocks are much stronger, lighter and more durable  
as well as cheaper than other iron blocks taking same size of rope.

DIMENSIONS.			COMMON IRON BUSHED.			PATENT ROLLER BUSHED.		
Sizes, Sheaves. Inches.	For Rope, Diameter. Inches.	Shells, Length. Inches.	Single. Each.	Double. Each.	Triple. Each.	Single. Each.	Double. Each.	Triple. Each.
2 1/2 x 1 1/8	1 1/8	4	\$1.00	\$1.75	\$2.75	\$1.75	\$3.25	\$5.00
2 3/4 x 1 1/8	1 1/8	5	1.25	2.50	3.25	2.20	4.00	6.00
3 1/2 x 1 1/8	1 1/8	6	1.50	2.75	4.00	2.40	4.75	7.00
4 1/2 x 1 1/8	1 1/8	7	1.90	3.40	5.00	3.25	5.75	8.50
5 x 1 1/8	1 1/8	8	2.30	4.00	6.00	3.50	6.50	10.00
5 1/2 x 1 1/8	1 1/8	9	2.60	4.75	6.75	4.50	8.00	12.00
6 1/2 x 1 1/8	1 1/8	10	3.50	6.00	7.75	6.00	10.75	16.00
7 1/2 x 1 1/8	1 1/8	12	4.50	8.25	11.25	7.75	13.75	21.00
9 x 1 1/8	1 1/8	14	6.00	10.25	15.00			



Fig. 2298.

Adjustable Hinge Joint and  
Swivel. Iron Sheaves.

Diam. of Sheaves. Inches.	Width of Mortise. Inches.	For Rope, Diam. Inches.	Steel Roller, Bush. Each.	Bronze Self-Lub., Bush. Each.
10	1 5/8	1 1/4	\$17.50	\$18.50
12	1 7/8	1 1/2	20.00	21.00

## MALLEABLE IRON TACKLE BLOCKS.

With stiff swivel hooks, plain bushing, wide mortise.

Sizes, Sheaves. Inches.	For Rope, Diameter. Inches.	Shells, Length. Inches.	Single. Each.	Double. Each.
3 1/2 x 1 1/8	1 1/8	6	\$2.00	\$3.25
5 x 1 1/8	1 1/8	8	2.75	4.75
5 1/2 x 1 1/8	1 1/8	9	3.50	6.00
6 x 1 1/8	1 1/8	10	4.00	7.50

Blocks 12, 14 and 16 inch shell made wide mortise and with rings, hooks, or shackles as desired.

## MALLEABLE IRON SNATCH BLOCKS.

With patent automatic catch.

Sizes, Sheaves. Inches.	For Rope, Diameter. Inches.	Shells, Length. Inches.	Each.
4 x 1 1/2	1 to 1 1/4	8	\$6.50
5 1/2 x 1 7/8	1 1/4 " 1 1/2	10	9.00
7 x 2	1 1/2 " 1 3/4	12	10.50
8 x 2 1/4	1 3/4 " 2	14	13.25
9 x 2 1/2	2 " 2 1/4	16	16.00

PATENT IRON  
DOCK BLOCK.

## SHEAVES FOR ROPE STRAPPED AND INSIDE IRON STRAPPED BLOCKS.

Open Iron.

Lignumvita.

"COMMON SENSE"  
DOCK BLOCK.

COMMON.

PATENT.

COMMON.

PATENT.

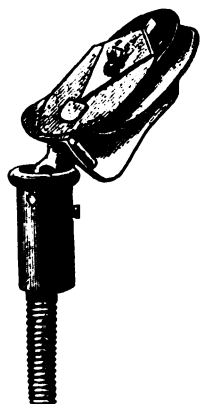


Fig. 2299.

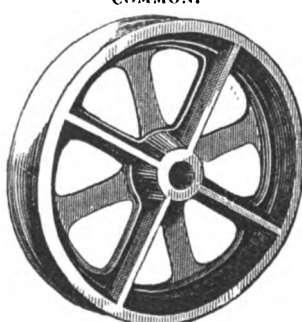


Fig. 2300.

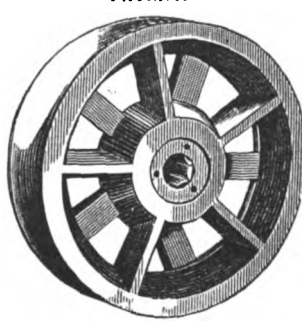


Fig. 2301.

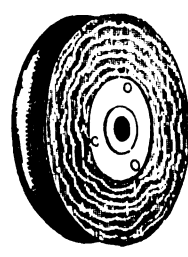


Fig. 2302.

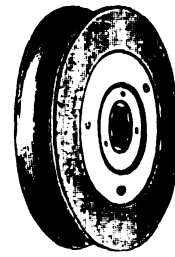


Fig. 2303.

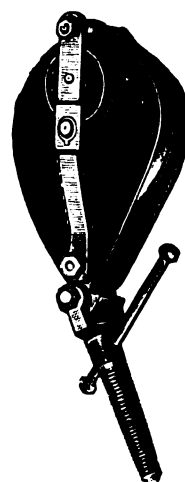


Fig. 2304.

Wrought Iron, with Bronze  
Bushings in Side Straps.

Iron Sheaves.				
Diam. of Sheaves. Inches.	Width of Mortise. Inches.	For Rope, Diam. Inches.	Swivel Screw. Each.	Universal Joint. Each.
6	1 3/4	1	\$11.25	
8	1 1/2	1 1/4	13.75	
10	1 5/8	1 3/8	16.75	\$19.75
12	1 7/8	1 1/2	19.50	22.50
15	1 7/8	1 1/2	22.00	25.00

## Prices, Figs. 2302 and 2303.

Sizes, Sheaves. Inches.	Hole For Pin. Inches.	For Block. Inches.	Common Bush. Each.	Patent Bush. Each.
1 1/2 x 1 1/8	3	3	\$0.07	\$0.43
2 x 1 1/8	3 1/2	3 1/2	.08	.46
2 1/2 x 1 1/8	4	4	.10	.50
2 3/4 x 1 1/8	4 1/2	4 1/2	.13	.55
3 x 1 1/8	5	5	.15	.60
3 1/2 x 1 1/8	6	6	.20	.70
4 x 1 1/8	7	7	.30	.80
5 x 1 1/8	8	8	.40	1.10
5 1/2 x 1 1/8	9	9	.50	1.20
6 1/2 x 1 1/8	10	10	.60	1.50
7 x 1 1/8	11	11	.80	1.75
8 x 1 1/8	12	12	1.00	2.00
9 x 1 1/8	13	13	1.20	2.30
9 1/2 x 1 1/8	14	14	1.30	2.55
10 x 1 1/8	15	15	1.50	3.00
10 1/2 x 1 1/8	16	16	1.70	3.50

## Prices, Figs. 2300 and 2301.

Sizes, Sheaves. Inches.	Hole For Pin. Inches.	For Block. Inches.	Common Bush. Each.	Patent Bush. Each.
1 1/2 x 1 1/8	3	3	\$0.09	\$0.40
2 x 1 1/8	3 1/2	3 1/2	.10	.42
2 1/2 x 1 1/8	4	4	.12	.45
2 3/4 x 1 1/8	4 1/2	4 1/2	.15	.50
3 x 1 1/8	5	5	.20	.55
3 1/2 x 1 1/8	6	6	.25	.65
4 x 1 1/8	7	7	.30	.75
5 x 1 1/8	8	8	.35	1.00
5 1/2 x 1 1/8	9	9	.45	1.10
6 1/2 x 1 1/8	10	10	.55	1.35
7 x 1 1/8	11	11	.70	1.65
8 x 1 1/8	12	12	.90	1.90
9 x 1 1/8	13	13	1.10	2.15
9 1/2 x 1 1/8	14	14	1.20	2.40
10 x 1 1/8	15	15	1.40	2.75
10 1/2 x 1 1/8	16	16	1.70	3.00

These Blocks have a swivel  
joint and spring to adapt them-  
selves to any direction of the  
rope.

7 inch sheave, for 1 inch rope  
or chain, steel friction rollers.  
Each .....\$16.00

10 inch sheave, for 1 1/2 inch  
rope or chain, steel friction  
rollers.  
Each .....\$19.00

15 inch sheave, for 1 1/2 inch  
rope or chain, steel friction  
rollers.  
Each .....\$22.50

## TACKLE BLOCKS, GIN BLOCKS, ETC.

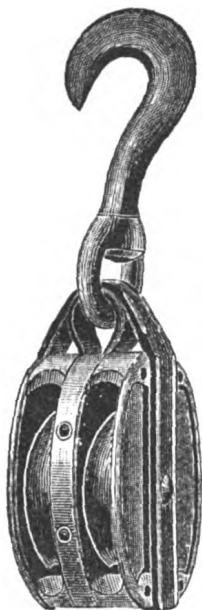
IRON SIDE WOOD BLOCKS.  
Loose Hook. With Shackle.

Fig. 2305.

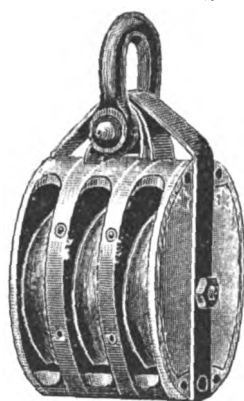


Fig. 2306.

## Prices, Iron Side Wood Blocks, Figs. 2305 and 2306.

Shells. Inches.	For Rope. Diam.	Common Iron Bushed.			Patent Roller Bushed.		
		Single.	Double.	Triple.	Single.	Double.	Triple.
8	1 1/8 in.	\$2.65	\$5.00	\$7.00	\$3.75	\$6.50	\$9.50
9	1 1/8 "	3.00	5.50	8.00	4.25	7.25	10.00
10	1 1/4 "	3.75	6.35	9.50	5.00	9.00	12.75
12	1 1/2 "	5.00	9.00	12.50	6.75	11.75	16.50
14	1 3/4 "	6.25	11.50	16.00	8.25	14.75	20.50
15	1 3/4 "	8.00	13.50	19.00	10.00	17.00	23.50
16	1 3/4 "	10.00	18.00	27.00	12.00	21.50	33.50
18	2 "	15.00	28.00	36.00			

## BLOCKS FOR ROPE STRAPS.

Single. Double. Triple.



Fig. 2307.

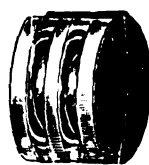


Fig. 2308.

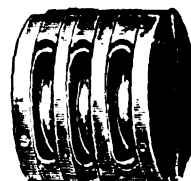


Fig. 2309.

## Prices, Figs. 2307 to 2309, Iron Bushed.

Sizes, inches.....	3 to 9	10 to 13	14 to 16
Each Mortise, per inch.....	\$0.07 1/2	.10	.14

## Prices, Figs. 2307 to 2309, Roller Bushed.

Sizes, inches.....	3 to 4 1/2	5 to 9	10 to 13	14 to 16
Galv'd Sheaves, per inch.....	\$0.16			
Brass " " ".....	.25			
Lignumvitae " " ".....		.16	.18	.25

The Blocks Figs. 2305 and 2306 have outside iron sides with wood partitions and end pieces, making them light and strong. Designed for mines, railroad use and stone quarries.

## Prices, Wood Snatch Blocks.

Fig. 2310.

Shells. Inches.	For Rope. Diam.	Iron Bushed.	Bronze Bushed.
6	7/8 in.	\$3.60	\$4.50
7	7/8 "	4.00	5.25
8	1 "	5.00	6.25
9	1 1/8 "	6.00	7.00
10	1 1/4 "	7.00	8.75
12	1 1/2 "	8.00	10.00
14	1 3/4 "	10.00	12.50
16	2 "	13.00	16.00
18	2 1/4 "	19.00	23.00
20	2 1/2 "	30.00	35.00
22	3 "	45.00	50.00
24	3 1/2 "	55.00	63.00

## SNATCH BLOCKS.

Wood. Wrought Iron.

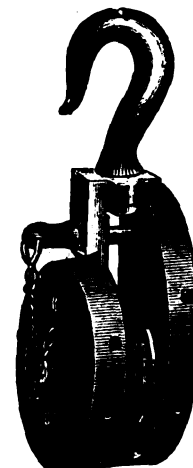


Fig. 2310.



Fig. 2311.

## Prices, Wrought Iron Snatch Blocks, Fig. 2311.

Shells. Inches.	For Rope. Diam.	Iron Bushed.	Bronze Bushed.
7	7/8 in.	\$5.25	\$6.50
8	1 "	6.35	7.65
9	1 1/8 "	7.50	9.00
10	1 1/4 "	9.00	10.50
12	1 1/2 "	11.00	13.00
14	1 3/4 "	14.00	16.25
16	2 "	19.00	21.75
18	2 1/4 "	25.00	28.00
20	2 1/2 "	36.00	39.50

## WROUGHT IRON TACKLE BLOCKS.

Single. Double. Triple.



Fig. 2312.

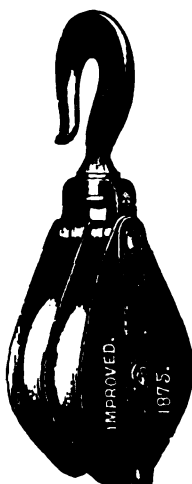


Fig. 2313.



Fig. 2314.

## Prices, Wrought Iron Tackle Blocks.

Shells. Inches.	For Rope. Diam.	Common Iron Bushed.			Phosphor Bronze Bushed.		
		Single.	Double.	Triple.	Single.	Double.	Triple.
6	5/8 in.	\$2.35	\$3.75	\$4.60	\$3.35	\$5.75	\$7.60
7	3/4 "	3.10	4.60	5.85	4.35	7.10	9.60
8	7/8 to 1 "	4.00	5.85	7.50	5.25	8.35	11.25
9	1 to 1 1/8 "	5.35	8.20	10.50	6.85	11.20	15.00
10	1 1/4 "	6.20	10.50	13.50	7.85	13.80	18.50
12	1 1/2 "	7.60	13.50	17.25	9.45	17.20	22.80
14	1 3/4 "	10.50	20.00	27.00	12.60	24.20	33.30
16	2 "	16.70	27.50	38.50	19.20	32.50	46.00
18	2 1/4 "	28.50	43.00	58.50	31.75	49.50	68.25
20	2 1/2 "	38.60	58.50	86.00	42.00	65.30	96.20

Steel Roller Bushed Blocks same list as Common Iron Bushed, but take smaller discount.

Sizes given are for manila rope. Can furnish for wire rope or chain when so ordered.

## GIN BLOCK.

Wrought Iron.

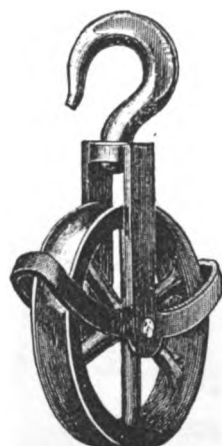


Fig. 2315.

## WIRE ROPE PULLEY BLOCKS.

Single. Double.

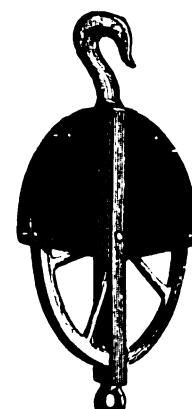


Fig. 2316.

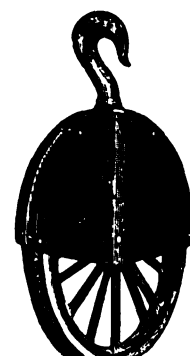


Fig. 2317.

## Prices, Gin Blocks, Fig. 2315.

Diameter, wheel.....inches,	6	7	8	9	10	11
Diameter, rope....."	1	1 1/4	1	1	1	1
Gin Blocks.....each,	\$3.15	3.50	3.85	4.20	4.55	5.25
Sheaves only....."	.90	1.35	1.60	1.70	1.80	2.25
Diameter, wheel.....inches,	12	14	16	18	20	22
Diameter, rope....."	1	1 1/4	1 1/2	1 1/2	1 1/2	1 1/2
Gin Blocks.....each,	\$5.80	6.30	8.40	9.80	11.90	13.30
Sheaves only....."	2.50	2.70	3.80	4.30	5.65	6.75

## Prices, Wire Rope Pulley Blocks, Figs. 2316 and 2317.

Grooved for wire rope up to 3/4 inch diameter.

Diameter, sheave.....inches,	10	12	14	18	20
Single Blocks.....each,	\$6.50	8.75	11.50	14.50	18.00
Double "....."	11.00	13.00	17.50	23.00	29.00
Sheaves only....."	1.60	2.40	2.75	4.60	5.50

Beckets furnished with Wire Rope Blocks without extra charge, but are only sent when ordered.



THORNTON N. MOTLEY, NEW YORK.

# ROPE HOISTING MACHINES AND ELEVATOR GEARING.

PORTABLE HOIST.  
Nos. 0 and 1.

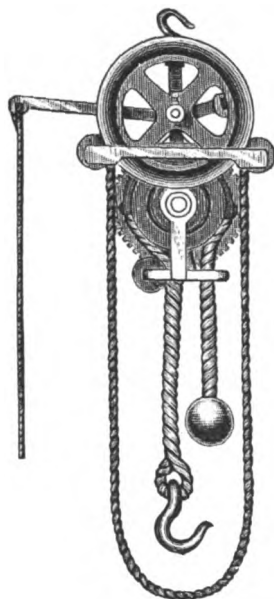


Fig. 2318.

SECTIONAL CUT.  
Showing Brake.

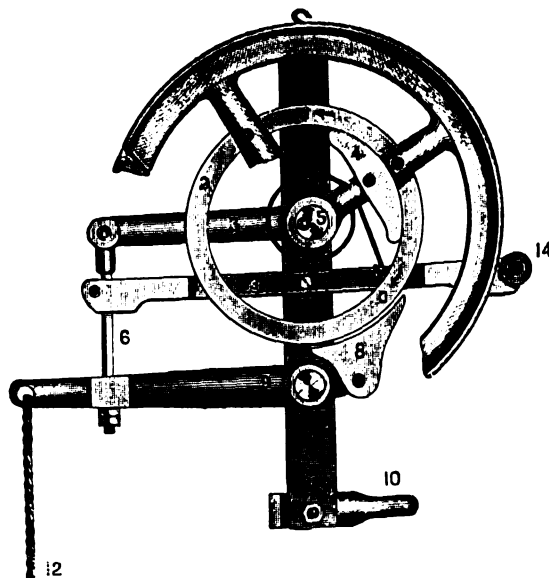


Fig. 2319.

PORTABLE HOIST.  
Nos 00, 2 and 3.

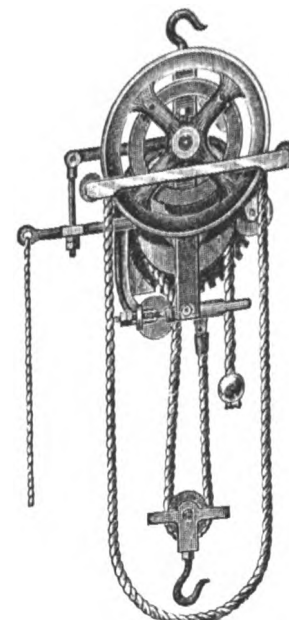


Fig. 2320.

## Description.

These machines are quick lifting, quick lowering, and powerful. They will hold load at any point and by pulling on brake rope, load can be dropped instantly. The ropes will not slip, cut, or leave the wheels at any time.

The Portable Hoist is fitted with a swivel hook by which it can be attached to any support. The machine simply consists of a frame between which are placed a pinion gear and binding yoke. The hand rope wheel upon which the automatic brake acts to prevent any accidental lowering of the load, is placed outside the frame. The load rope does not wind around a drum, but is kept from slipping as shown in Fig. 2322. E is a lug part of frame on which the yoke H is pivoted. L is a stud (one on each side of the yoke H) fastened into the frame. A is also roller journaled in the yoke H. D is bottom of the frame, and also guide for the load rope. J is a small weight to keep the rope from kinking. If a load is put on the hook K, the rope will push the yoke in the direction of the arrow P, thus causing the roller A to bind the rope into the wheel I. The jamb nuts C prevent the yoke from pushing any further than is required to bind the rope, and it is only bound when a load is on the hook, which makes the machine easy to work with or without a load.

The Hatchway Hoist is constructed the same as the Portable, with the difference that the gears are fitted in a cast iron frame, which is bolted to the ceiling instead of hooking. It is perfectly rigid and the hand rope wheel shaft can be lengthened so that the hand rope will run through eyelets on side of hatchway. A small platform can be readily attached to it.

## HATCHWAY HOIST.

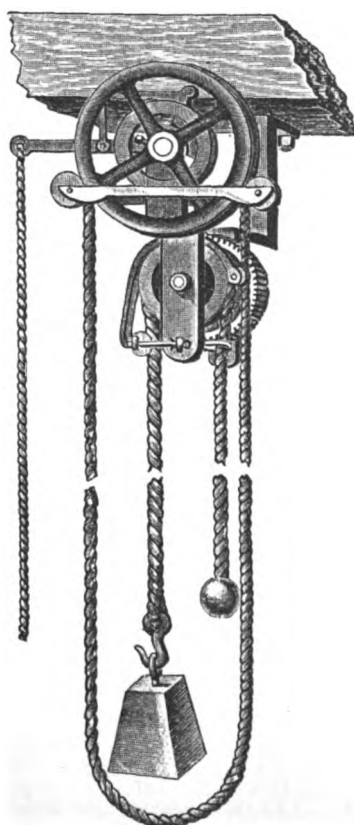


Fig. 2321.

## Explanation of Automatic Brake.

Fig. 2319 is detailed view, showing the automatic brake, also the brake which is used in lowering. 3 is a lever, placed on eccentric 5. 4 is shoe attached to it. 2 is a ring secured to the hand rope wheel. It will be seen that if the hand rope wheel 1 is pulled in the direction of the arrow U, that the brake will rise and allow the load to be hoisted; but as soon as the hand rope is let go, the wheel will run the direction of the arrow D, and the brake will expand in the rim 2, thus preventing the lowering of the load. The brake used in lowering is connected by the rod 6 to the automatic brake. 9 is brake lever and 8 the shoe. If the brake rope 12 is pulled up, it releases the automatic brake and at the same time brings the shoe 8 against the outside of the ring 2, thus by regulating the pull on brake rope, the load is lowered at any speed.

## Prices, Portable Hoists, Figs. 2318 and 2320.

Nos.	Will Lift.	Will Raise.	Weight of Machine.	Each.	Extra Lift Per Foot.
0	8 feet	150 lbs.	23 lbs.	\$10.00	\$0.10
00	8 "	300 "	26 "	12.00	.13
1	8 "	500 "	28 "	15.00	.18
2	9 "	1000 "	30 "	20.00	.25
3	10 "	2000 "	45 "	25.00	.28

The Nos. 00, 2 and 5 Hoists have attached to them a movable pulley block, as shown in Fig. 2320.

## Prices, Hatchway Hoists, Fig. 2321.

Nos.	Will Lift.	Will Raise.	Weight of Machine.	Each.	Extra Lift Per Foot.
4	16 feet	500 lbs.	115 lbs.	\$25.00	\$0.20
5	16 "	1000 "	125 "	30.00	.28

The No. 5 Hoist has attached to it a movable pulley block, as shown in Fig. 2320.

The prices given for extra lift on both Portable and Hatchway Hoists, includes all ropes. The rope used is 4 strand manila, although any kind of rope can be used when of proper size.

## ELEVATOR GEARING.

This Gearing is similar to the Hatchway Hoist. The shaft is lengthened so that the hand rope wheel comes to one side of hatchway. The rope having ball on end is passed to one side of hatchway and has a weight attached to it which counterbalances the weight of platform.

## Prices Complete Except Counterbalance Weight.

To Lift 500 lbs.....each, \$30.00	To Lift 1000 lbs.....each, \$40.00
Extra Rope, same price as for Hatchway Hoist.	

## SECTIONAL CUT.

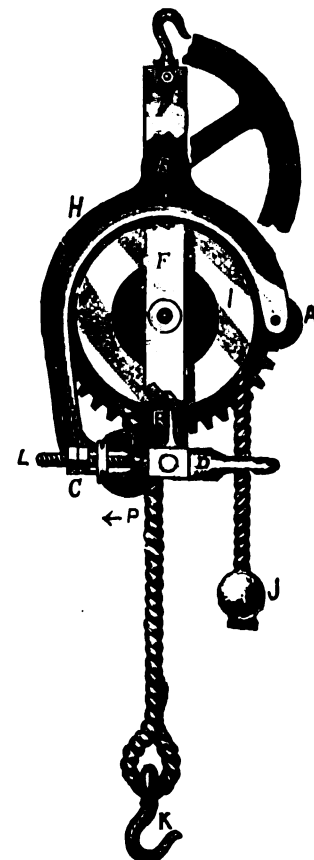


Fig. 2322.

## NATIONAL AND WESTON'S IMPROVED PULLEY BLOCKS.

THORNTON N. MOTLEY, SOLE AGENT.

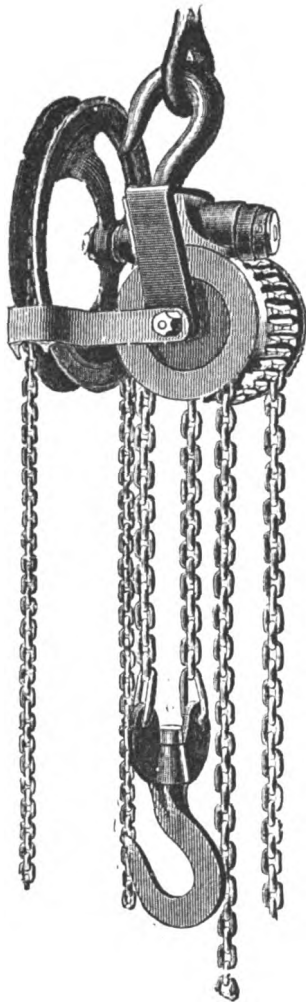
NATIONAL  
SCREW HOISTING MACHINE.  
Double Chain.

Fig. 2323.

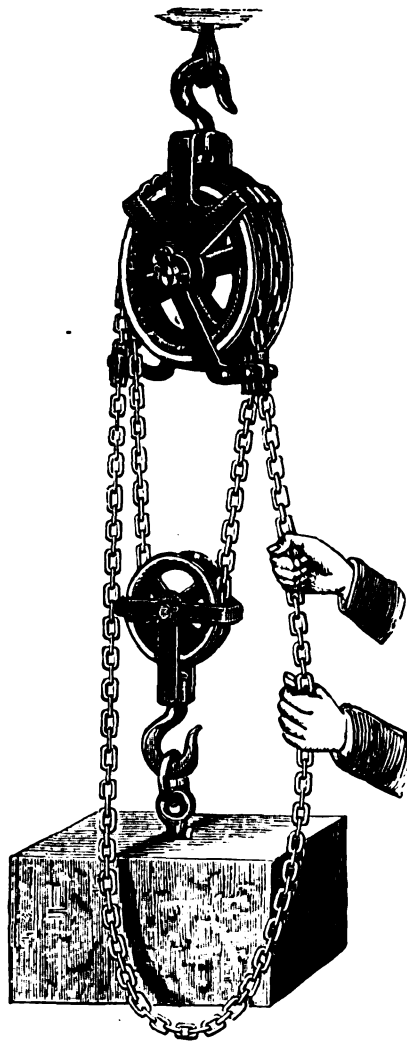
IMPROVED WESTON'S  
DIFFERENTIAL PULLEY BLOCK.  
Direct.

Fig. 2324.

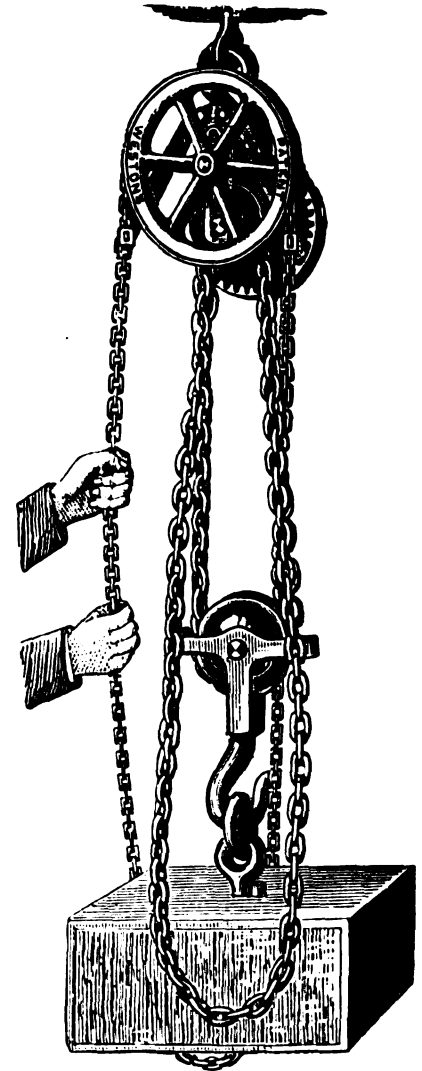
IMPROVED WESTON'S  
DIFFERENTIAL PULLEY BLOCK.  
Geared.

Fig. 2325.

## Prices and Description, National Screw Hoists, Fig. 2323.

For heavy weights this Hoist has no equal. It is safer and more durable than any other hoist. Having independent working chains and the load being carried on two distinct chains instead of one, the possibility of accident is greatly reduced. One man can lift to the full capacity of each machine. On the smaller sizes 35 lbs. lifts 1000 lbs. and more on the larger ones.

Capacity, pounds.....	500	1000	2000	3000	4000	6000	8000	10000	12000	16000	20000
Will lift, feet.....	8	8	8	8	9	10	10	12	12	12	12
Weight of machine, pounds.....	35	52	65	76	110	226	258	625	750	875	925
Each .....	\$22.50	25.00	30.00	40.00	60.00	75.00	95.00	140.00	180.00	260.00	340.00
Extra lift, per foot.....	1.00	1.20	1.50	1.75	2.00	2.20	2.40	3.00	3.75	4.75	6.00

In ordering chain allow four feet of chain to each foot of lift.

## Prices and Description, Improved Weston's Direct Differential Pulley Blocks, Fig. 2324.

The Improved Block is fitted with patent chain guides, which prevent the troublesome locking of chains. This arrangement also enables block to be used either horizontally or at any desired angle.

Capacity, tons.....	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1	1 $\frac{1}{2}$	2	3
Will lift, feet.....	5	6	7	8	8 $\frac{1}{2}$	9	10
Weight of machine, pounds.....	11	22	30	51	81	122	173
Each .....	\$10.00	13.00	15.00	20.00	25.00	30.00	40.00
Extra chain, per foot.....	.35	.36	.38	.40	.42	.44	.48

The length of chain required is about four times the height of lift.

## Prices and Description, Improved Weston's Geared Differential Pulley Blocks, Fig. 2325.

With this Block there is less lifting chain than with Fig. 2324, and the power of the block and durability of the chain are greater. Both arrangements are fitted with patent chain guides, which prevent twisting and locking of chain, and enables the block to be used at any angle. With this block one man can lift from 2000 to 5000 lbs.

Capacity, tons.....	1	2	3	4	5	6	8	10
Will lift, feet.....	8	9	10	11	12	13	14	16
Weight of machine, pounds.....	62	109	159	257	324	493	735	1054
Each .....	\$35.00	45.00	60.00	75.00	90.00	120.00	160.00	215.00
Extra main chain, per foot.....	.40	.44	.48	.54	.60	.70	.85	1.00
Extra Hand Chain, same sizes for all weights of pulley blocks.....	per foot, \$0.38							

For each foot of extra hoist allow 2 $\frac{1}{2}$  feet of main chain and 2 feet of hand chain.

THORNTON N. MOTLEY, NEW YORK.

# EADES' AND HELICAL PULLEY BLOCKS.

THORNTON N. MOTLEY, SOLE AGENT.

EADES' PATENT  
DIFFERENTIAL PULLEY BLOCK.  
Pattern No. 1.

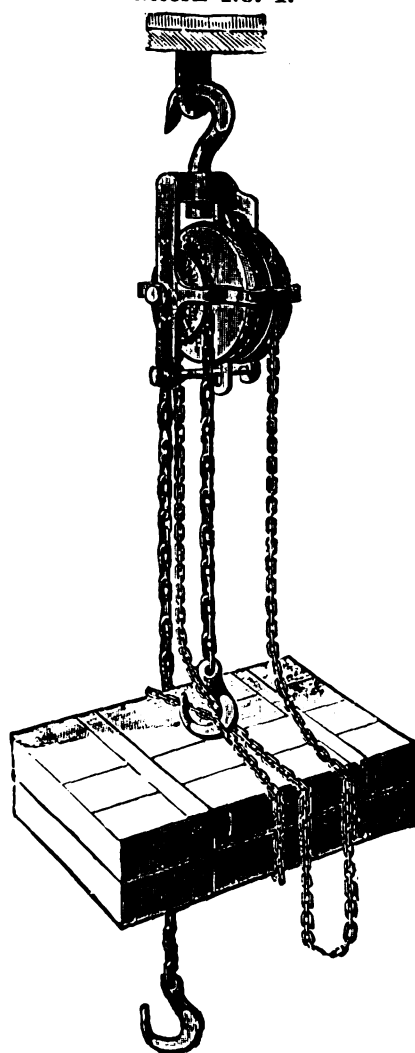


Fig. 2326.

EADES' PATENT  
DIFFERENTIAL PULLEY BLOCK.  
Pattern No. 3, Geared.

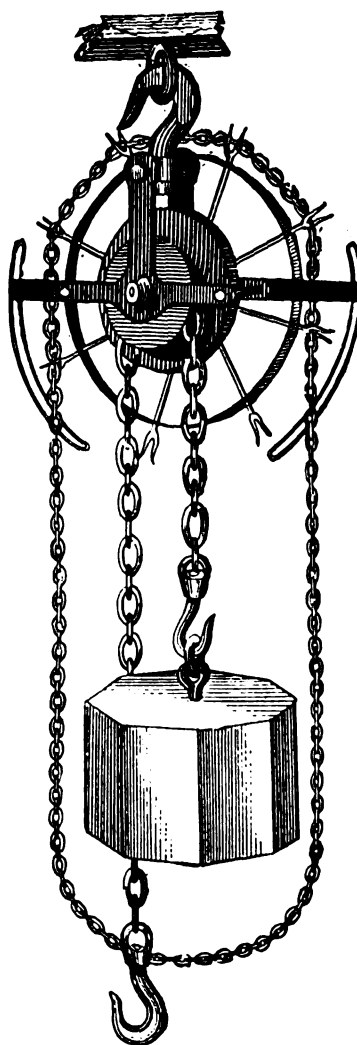


Fig. 2327.

HELICAL  
PULLEY BLOCK.  
Lubricated Counter Weight.

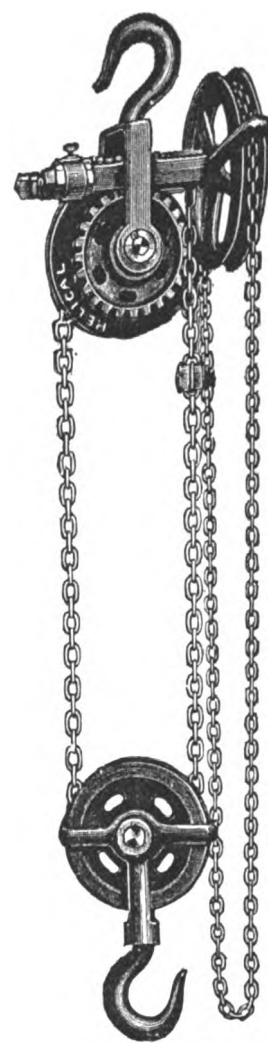


Fig. 2328.

## Prices, Eades' Differential Pulley Blocks, Figs. 2326 and 2327.

This Hoist is very easy to work. One man can lift a ton. It sustains the load and can not slip. The lifting chain has a hook at each end, and no lowering is required for a fresh load. The hand chain is independent of the lift chain, and can be worked at an angle, thus enabling the workman to stand from under the load. Having two chains, there is less wear upon the links and sheaves, and they consequently last much longer than the ordinary differential pulleys.

### PATTERN No. 1, Fig. 2326.

Capacity, tons.....	$\frac{1}{4}$	$\frac{1}{2}$	1	$1\frac{1}{2}$	2	3	4
Will lift, feet.....	7	7	8	9	10	10	11
Weight of machine, pounds.....	23	28	45	70	103	163	210
Each.....	\$13.00	15.00	20.00	25.00	30.00	40.00	60.00
Extra lift, per foot.....	.00	1.10	1.40	1.55	1.70	1.90	2.10

### PATTERN No. 3, GEARED, Fig. 2327.

Capacity, tons.....	3	4	5	6	8	10
Will lift, feet.....	10	11	12	13	14	16
Diameter sprocket wheel, feet.....	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{1}{2}$
Each.....	\$60.00	80.00	110.00	150.00	210.00	275.00
Extra lift, per foot.....	1.00	2.10	2.30	2.50	2.90	3.25

The price for extra lift includes one foot of lift chain and two feet of endless hand chain.

## Prices and Description, Helical Pulley Blocks, Fig. 2328.

With this Block the power required for lifting is only 5 per cent. of the weight raised at a speed of 24 inches per minute. The lowering is effected with ease. The number of sheaves may be increased or part may be dispensed with when only light loads are being raised. The lifted weight cannot run down of its own accord when suspended. The blocks may be worked from below, above or from either side. The pressure of the screw upon the pinion is never more than half the weight of the load, one end of chain being fixed to the frame; and it should not be overlooked that the said pressure does not increase in the double, triple or quadruple pulley blocks, part of the weight being borne by the chain.

Capacity, pounds.....	500	1000	2000	3000	4000	6000	8000	10000	12000	16000	20000
Will lift, feet.....	8	8	8	8	9	10	10	12	12	12	12
Each.....	\$22.50	25.00	30.00	40.00	55.00	75.00	95.00	140.00	180.00	260.00	340.00
Extra lift, per foot.....	1.00	1.20	1.50	1.75	2.00	2.20	2.40	3.00	3.75	4.75	6.00

The height of lift should be stated when ordering. For single sheave the length of chain required is about 4 times the height of lift, for double sheave 6 times, and for triple sheave 8 times. This includes hand chain.

## OVERHEAD RAILWAY AND CRANES.

## PLAIN RAIL AND TRAVELER.

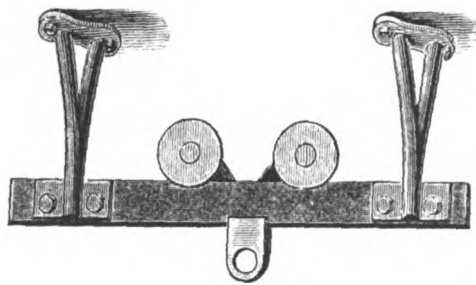


Fig. 2329.

## PLAIN RAIL AND GEARED TRAVELER.

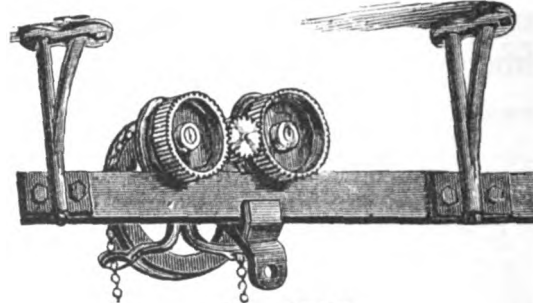


Fig. 2330.

The above cuts represent sections of a simple overhead rail or tramway, easily placed in position and used in connection with hoists, pages 269, 270 and 271. I will furnish rail and hangers with bolts and wood screws complete and ready to be placed in position.

## Dimensions and Capacity Plain Rail.

For Hoist, capacity, lbs.....	500	1000	2000	3000	4000	6000	8000
Size of rail.....	3 ins. x 1/2 in.	3 ins. x 1/2 in.	4 ins. x 3/4 in.	4 ins. x 3/4 in.	4 ins. x 3/4 in.	6 ins. x 1 in.	6 ins. x 1 in.
Breakage strain, lbs.....	2700	2700	7200	7200	7200	20600	20600

## Dimensions Hangers.

Size of rail, inches.....	3 ins. x 1/2 in.	4 ins. x 3/4 in.	6 ins. x 1 in.
Drop of Hangers, inches.....	7 1/2, 9, 12	7 1/2, 9, 12, 14, 16, 18, 24, 30, 36, 40, 48	12, 14, 16, 18, 24, 30, 36, 40, 48

Prices of Rail and Hangers quoted on application.

## Prices, Plain Travelers.

As shown on Rail in Fig. 2329.

For Rail, inches.....	3x1/2	4x3/4	6x1
Each.....	\$6.70	8.66	10.00

## Prices, Geared Travelers.

As shown on Rail in Fig. 2330.

For Rail, inches.....	3x1/2	4x3/4	6x1
Each.....	Prices on application.		

## HAND WHARF CRANE.

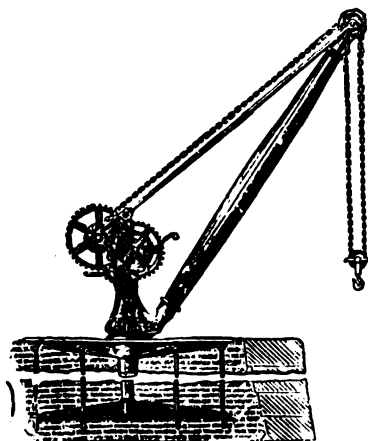


Fig. 2331.

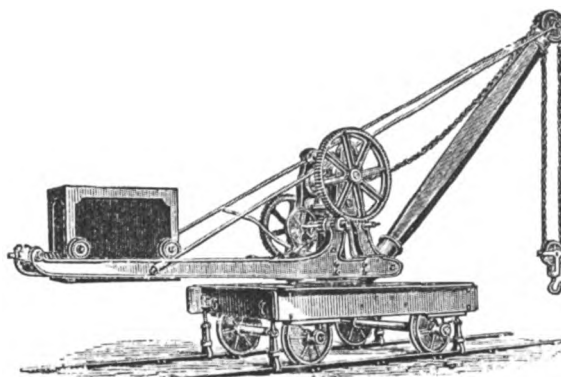
PORTABLE HAND CRANE.  
For Railroads.

Fig. 2332.

## STEAM CRANE.

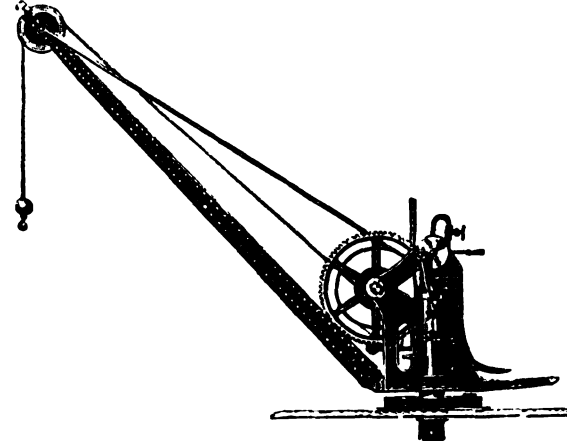


Fig. 2333.

## Prices, Pillar or Wharf Cranes, Fig. 2331.

With single and double purchase lifting gear, powerful strap brake and lever, two winch handles, strong iron crane post and iron foundation plates with bolts, wood jib, turned roller path, sufficient chain with block to reach the ground.

Capacity (tested), tons.....	3/4	1	1 1/2	2	3	4	5	8	10
Weight, pounds.....	1500	2800	3000	4000	4500	7800	8500	16000	17000
Radius of jib, feet.....	8	8	9	10	12	12	14	14	14
Each.....	\$210.00	290.00	335.00	379.00	435.00	630.00	785.00	1275.00	1500.00

The first two sizes have single purchase gear only. The above Cranes can be supplied with wrought tubular jibs at slight extra cost, and are adapted to wooden wharves provided timbers are set to suit.

## Prices, Portable Hand Cranes, Fig. 2332.

With single and double purchase lifting gear, powerful strap brake and lever, two winch handles, strong iron column and foundation with turned roller path, adjustable balance box which may be regulated according to weight raised, wood jib, sufficient chain to reach ground complete with block, the whole supplied with a strong wood framed car with four iron wheels, and wrought iron axles for rails of any gauge, sufficient to afford the necessary base for stability. State gauge of rails when ordering.

Capacity (tested), tons.....	1	2	3	4	5	7	8	10	12
Weight, pounds.....	3000	4800	7500	8200	14000	17500	18000	22000	24000
Radius of jib, feet.....	8	10	12	12	14	14	14	14	14
Each.....	\$300.00	470.00	700.00	880.00	1125.00	1440.00	1550.00	1900.00	2175.00
Iron Clips for rails, extra.....	14.00	18.00	23.00	27.00	29.00	32.00	32.00	32.00	34.00

## Prices, Steam Cranes, Fig. 2333.

This Crane is for ships' decks, wharves, etc., with wrought iron jib. It has two cylinders fixed on the crane frame. The slewing is done by friction clutches and spur gearing. The motion can be reversed by a simple throw of clutch handle. A powerful foot brake is provided for lowering. The crane post is best hammered iron forging. The engines work at 40 lbs. steam pressure, and lift the load with single chain and single purchase, except the largest size, which has double purchase. Price includes sufficient chain, with hook and ball, to reach the ground.

Capacity (tested), tons.....	1	2	3	Capacity (tested), tons.....	1	2	3
Radius of jib, feet.....	15	15	15	Weight, tons.....	3	4	5
Size of cylinder, inches.....	5x9	6x10	7x10 1/2	Each.....	\$1125.00	1400.00	1800.00

The prices named on Cranes, Figs. 2331, 2332 and 2333, do not include the cost of erection.

THORNTON N. MOTLEY, NEW YORK.

## DERRICK FITTINGS.

## CASTING TO RECEIVE MAST AND BOOM.

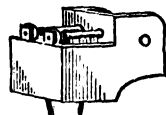


Fig. 2334.

## With Bolts.

No. 1, marked A, for mast 10 ins. diam.....	each, \$9.35
" 2, " B, " 12 " .....	" 15.60
" 3, " C, " 14 " .....	" 19.60
" 4, " D, " 16 " .....	" 27.50

## STEP CASTINGS, WITHOUT ARMS.



Fig. 2336.

No. 9, marked A.....	each, \$4.00
" 10, " B.....	" 4.50
" 11, " C.....	" 5.50
" 12, " D.....	" 9.50

## WING GUDGEONS, HOLLOW STEM.



Fig. 2338.

No. 16, marked A, for mast 10 ins. diam.....	each, \$2.25
" 17, " B, " 12 " .....	" 5.00
" 18, " C, " 14 " .....	" 5.50
" 19, " D, " 16 " .....	" 6.25

## GUY CAPS FOR TOP OF MAST.



Fig. 2340.

## Complete with Links.

No. 22½, marked OE, 5 links, mast 8 ins. diam. ea.,	\$4.25
" 23, " E, 5 " 10 " .....	" 5.00
" 24, " F, 5 " 12 to 14 " .....	" 8.50
" 25, " H, 6 " 14 to 16 " .....	" 9.00
" 26, " I, 8 " 16 " .....	" 12.00

## FLAT BANDS FOR TOP OF MAST, WITH LINK.



Fig. 2342.

No. 31½, for mast 8 inches diameter.....	each, \$2.50
" 32, " 10 " .....	" 3.00
" 33, " 12 " .....	" 3.50
" 34, " 14 " .....	" 4.25
" 35, " 16 " .....	" 5.00

## BANDS, WITH 2 LINKS.

## For Point of Boom.



Fig. 2344.

No. 39½, for mast 8 inches diameter.....	each, \$1.75
" 40, " 10 " .....	" 2.00
" 41, " 12 " .....	" 2.25
" 42, " 14 " .....	" 2.60
" 43, " 16 " .....	" 2.90

## CLIP FOR WIRE GUYS.

## Wrought Iron.



Fig. 2346.

No. 50, ½ to 1 in. diam. (Norway iron).....	each, \$0.50
---	--------------

## IRON BLOCKS.

Phosphor bronze bushing and self-lubricant. Heavy wrought frame and steel pin.



Fig. 2348.

No. 53, 10 inch Sheave, 1½ inch hook.....	each, \$10.00
" 54, 12 " 1½ " .....	" 11.00
" 55, 14 " 1¾ " .....	" 12.00
" 56, 16 " 1¾ " .....	" 13.00
" 57, 18 " 1¾ " .....	" 14.00

## IRON BLOCKS.

Phosphor bronze bushing and self-lubricant. Malleable iron guard and steel pin.



Fig. 2350.

No. 61, 10 inch Sheave, 1½ inch hook.....	each, \$7.00
" 62, 12 " 1½ " .....	" 8.00
" 63, 14 " 1¾ " .....	" 9.00

## IRON SHELL BLOCK.

## Double Sheave.

Swivel hook and becket, phosphor bronze bushing and self-lubricant.



Fig. 2352.

No. 67, 12 in. Sheave.....	each, \$18.00
----------------------------	---------------

## STEEL PIN AND KEY.

For Sheave in Bottom of Mast, 1½ in. diam.

No. 69 .....	each, \$0.50
--------------	--------------



Fig. 2354.

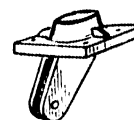
STEP CASTINGS WITH ARMS.  
To Receive Sheaves and Steel Pin.

Fig. 2335.

No. 4½, marked OA.....	each, \$5.00
" 5, " A.....	" 5.75
" 6, " B.....	" 7.50
" 7, " C.....	" 8.50
" 8, " D.....	" 10.60

## BOX MAST CASTINGS, WITH BOLTS.



Fig. 2337.

No. 12½, marked ON, for mast 8 ins. diam.....	each, \$4.50
" 13, " N, " 10 " .....	" 7.00
" 14, " O, " 12 " .....	" 8.00
" 15, " P, " 14 " .....	" 9.50

## BOOM CASTINGS WITH STEEL PIN.



Fig. 2339.

No. 19½, marked OK, for mast 7 ins. diam.....	each, \$2.75
" 20, " K, " 8 " .....	" 3.50
" 21, " L, " 9 " .....	" 4.50
" 22, " M, " 10 " .....	" 5.50

## GUDGEONS FOR TOP OF MAST.

## With Collars and Keys, Wrought Iron.



Fig. 2341.

No. 26½, 1¾ inches diameter.....	each, \$2.50
" 27, 2 " .....	" 3.50
" 28, 2¼ " .....	" 4.50
" 29, 2½ " .....	" 5.50
" 30, 2¾ " .....	" 6.50
" 31, 3 " .....	" 7.50

## FLAT BANDS FOR TOP OF MAST, PLAIN.



Fig. 2343.

No. 35½, for mast 8 inches diameter.....	each, \$1.00
" 36, " 10 " .....	" 1.50
" 37, " 12 " .....	" 2.00
" 38, " 14 " .....	" 2.75
" 39, " 16 " .....	" 3.50

## STEEL PINS, 1¼ INS. DIAM.

## For Sheaves in Mast.



Fig. 2345.

No. 44, for Sheaves 10 inches diameter.....	each, \$0.40
" 45, " 12 " .....	" .42
" 46, " 14 " .....	" .45
" 47, " 16 " .....	" .50

## GUY SHACKLES.



Fig. 2347.

No. 51, 7/8 inch iron (Norway iron).....	each, \$0.75
" 52, 1 " " .....	" 1.00

## IRON BLOCKS.

Phosphor bronze bushing and self-lubricant. Heavy wrought frame and steel pin with becket.



Fig. 2349.

No. 58, 12 inch Sheave, 1½ inch hook.....	each, \$13.00
" 59, 14 " 1¾ " .....	" 14.00
" 60, 16 " 1¾ " .....	" 15.00

## IRON BLOCKS.

Phosphor bronze bushing and self-lubricant. Malleable iron guard and steel pin with becket.



Fig. 2351.

No. 64, 10 inch Sheave, 1½ inch hook.....	each, \$8.00
" 65, 12 " 1½ " .....	" 9.00
" 66, 14 " 1¾ " .....	" 10.00

## IRON SHELL BLOCK.

## Single Sheave.

Swivel hook and becket, phosphor bronze bushing and self-lubricant.



Fig. 2353.

No. 68, 12 in. Sheave.....	each, \$13.00
----------------------------	---------------

## STEEL PIN AND KEY.

For Sheave in Iron Block, 1½ in. diam.

No. 70 .....	each, \$0.40
--------------	--------------



Fig. 2355.



## DERRICK SHEAVES, HOISTING WHEELS, ETC.

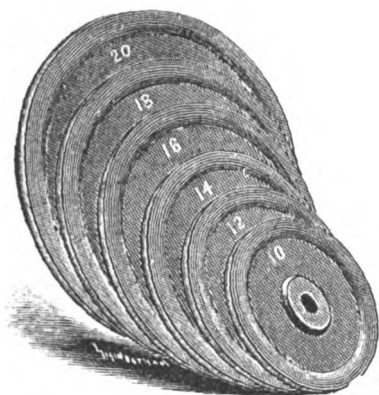
IRON SHEAVES FOR DERRICKS,  
ELEVATORS, ETC.

Fig. 2356.

PLAIN.  
Sectional  
View.

Fig. 2357.

IRON HOISTING WHEEL.



Fig. 2358.

WOOD LINED.  
Sectional  
View.

Fig. 2359.

Plain or Wood Lined Wheels, 3 to 5 feet in diameter. Prices on application.

Diam. (full) Ins.	Common Sheaves.		Phosphor Bronze Bushed Sheaves.		
	Hole for Pin. Ins.	Each.	Hole for Pin. Ins.	For Wire Cable to 1 1/2 ins. diam. Each.	For Manila Rope to 2 1/4 ins. diam. Each.
4	7/8	\$0.50	5/8	\$1.10	\$1.40
5	7/8	.60	5/8	1.20	1.50
6	1	.70	3/4	1.30	1.60
7	1	.80	3/4	1.40	1.70
8	1	.95	3/4	1.55	1.85
9	1 1/8	1.05	7/8	1.70	2.00
10	1 1/8	1.20	7/8	1.85	2.15
11	1 1/8	1.35	7/8	2.00	2.30
12	1 1/8	1.50	1	2.20	2.50
13	1 1/4	1.65	1	2.40	2.70
14	1 1/4	1.80	1	2.60	2.90
15	1 1/4	2.00	1	2.85	3.15
16	1 1/4	2.20	1	3.10	3.40
17	1 1/4	2.40	1 1/8	3.45	3.75
18	1 1/4	2.65	1 1/8	3.80	4.10
20	1 3/8	3.00	1 1/8	4.20	4.50
22	1 3/8	3.50	1 1/8	4.70	5.00
24	1 3/8	4.35	1 1/4	5.70	6.00
26	1 1/2	5.35	1 1/4	6.85	7.10
28	1 1/2	6.50	1 1/2	8.10	8.50
30	1 1/2	8.00	1 1/2	10.00	10.50

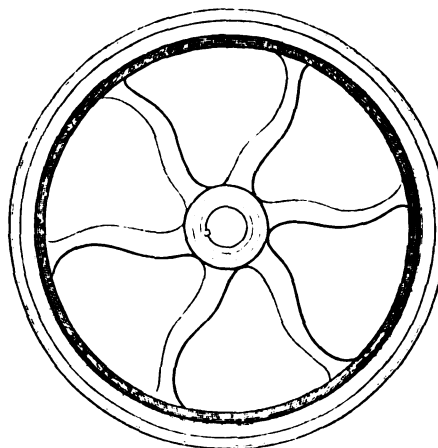
WHEEL FOR TRANSMISSION OF POWER BY WIRE ROPE.  
Sectional View.

Fig. 2360.

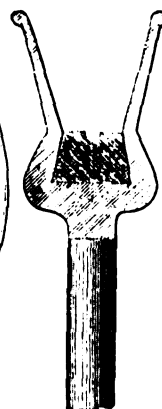


Fig. 2361.

## Prices, Fig. 2360.

1 1/2 feet diameter.....	each, \$ 7.00
2 " " " " " "	" 8.00
3 " " " " " "	" 20.00
4 " " " " " "	" 28.00
5 " " " " " "	" 40.00
6 " " " " " "	" 65.00
7 " " " " " "	" 80.00
8 " " " " " "	" 110.00
9 " " " " " "	" 190.00
1 " " " " " "	" 210.00

The above prices include boring the hub to the required size, and either the rubber, leather or segmental wood filling.

Special prices for larger wheels.

## WIRE ROPE FITTINGS.

THIMBLE SPLICED IN.



Fig. 2362.

THIMBLE AND HOOK.

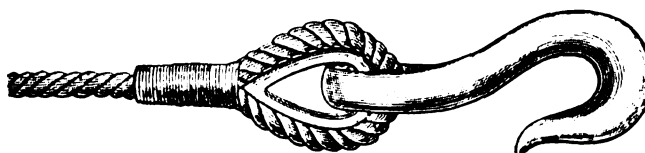


Fig. 2363.

CLOSED SOCKET.



Fig. 2364.

OPEN SOCKET WITH KEY.



Fig. 2365.

SOCKET AND HOOK.

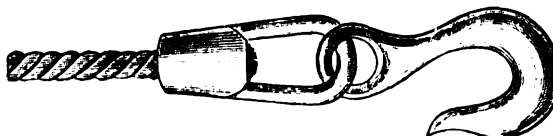


Fig. 2366.

SOCKET AND SWIVEL HOOK.

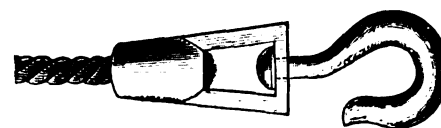


Fig. 2367.

## Prices, Wire Rope Fittings. Figs. 2362 to 2367.

Sizes, Rope Diam. Ins.	THIMBLES.		THIMBLES AND HOOKS.		THIMBLES AND SISTER HOOKS.		* CLOSED SOCKETS.		* OPEN SOCKETS WITH KEYS.		* SOCKETS AND HOOKS.		* SOCKETS AND SWIVEL HOOKS.	
	Loose.	Spliced in. Fig. 2362.	Loose.	Spliced in. Fig. 2363.	Loose.	Spliced in.	Loose.	Fastened to Rope. Fig. 2364.	Loose.	Fastened to Rope. Fig. 2365.	Loose.	Fastened to Rope. Fig. 2366.	Loose.	Fastened to Rope. Fig. 2367.
2 1/4								\$11.00		\$13.00		\$14.00		\$17.00
2								10.00		11.50		12.50		14.00
1 3/4								8.50		9.00		10.00		11.50
1 1/2								6.50		7.75		8.50		10.00
1 1/4								4.50		5.50		6.50		7.50
1 1/2	\$0.40	\$3.00	\$0.80	\$3.50	\$1.25	\$4.00		3.75		4.75		5.50		6.50
1 1/4	.30	2.75	.60	3.00	1.00	3.50		3.25		4.00		4.75		5.50
1 1/8	.25	2.50	.50	2.75	.75	3.00		3.25		4.00		4.75		5.50
1	.18	2.00	.45	2.25	.60	2.50		3.25		3.75		4.25		5.00
7/8	.16	1.75	.40	2.00	.50	2.25		3.00		3.50		4.00		4.50
3/4	.15	1.50	.35	1.75	.45	2.00		2.75		3.25		3.75		4.00
5/8	.14	1.25	.30	1.50	.40	1.65		2.25		2.75		3.25		3.75
1/2	.12	1.00	.25	1.25	.35	1.40		2.25		2.75		3.25		3.75
3/8	.10	.75	.20	1.00	.30	1.25		2.00		2.50		3.00		3.50

\*Please state whether to be used on Steel or Iron Rope.

THORNTON N. MOTLEY, NEW YORK.

WIRE ROPE FITTINGS.—CONTINUED.  
TURNBUCKLE.

PATENT CLAMP.

LOOP STIRRUP.

OPEN STIRRUP.

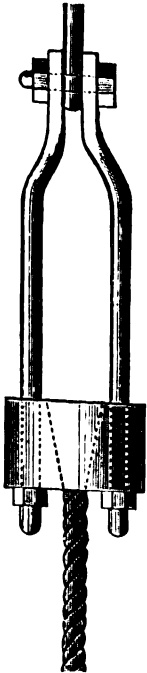


Fig. 2368.

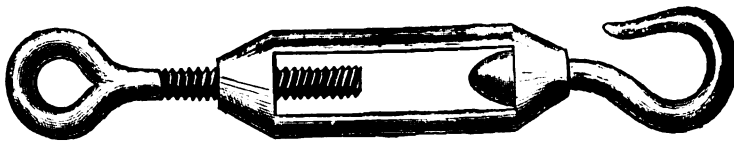


Fig. 2369.

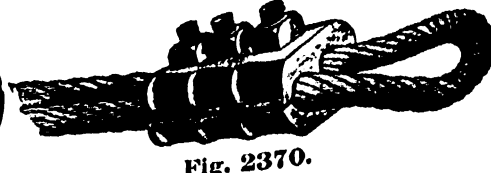


Fig. 2370.

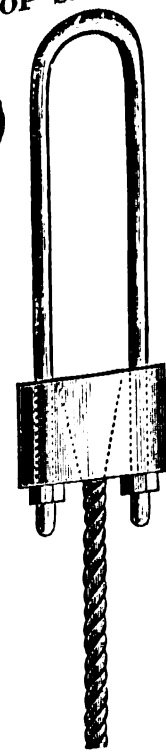


Fig. 2371.

## Prices Wire Rope Fittings, Figs. 2368 to 2371.

Sizes of Rope. Diameter in Inches.	OPEN STIRRUPS. Fig. 2368.		LOOP STIRRUPS. Fig. 2371.		TURNBUCKLES. Galvanized.		Plain.		PAT. CLAMPS. Fig. 2370.	
	Loose. Per lb.	Extra for Fastening. Each.	Loose. Per lb.	Extra for Fastening. Each.	Hook & Eye Fig. 2369. Each.	Double Eye. Each.	With Rod Ends. Per lb.	Each.	Circum. of Rope. Inches.	Each.
1 1/2	\$0.18	\$1.25	\$0.16	\$1.25			\$0.12		1 1/4	\$0.95
1 1/4	.18	1.25	.16	1.25			.12		1 1/2	1.10
1 1/8	.19	1.25	.17	1.25			.12		1 3/4	1.15
1	.19	1.00	.17	1.00	\$1.00	\$1.00	.12		2	1.15
3/4	.20	1.00	.18	1.00	3.40	3.40	.16		2 1/4	1.30
5/8	.22	.75	.20	.75	2.75	2.75	.16		2 1/2	1.45
7/8	.25	.75	.22	.75	2.00	2.00		\$1.20	2 3/4	1.60
1	.27	.50	.23	.50	1.50	1.50		.90	3	1.75
1 1/8	.30	.50	.25	.50	1.20	1.20		.75	3 1/4	1.90
					1.00	1.00		.60	3 1/2	2.05
									3 3/4	2.15
									4	2.25

Larger sizes Stirrups and Turnbuckles furnished at special prices.

## IRON AND STEEL WIRE ROPE.

For elevators, planes, slopes,  
shafts, etc.

Fig. 2372.

For derricks, ship rigging,  
bridges, etc.PLIABLE HOISTING ROPES.  
19 Wires to the Strand.

IRON.						
Diam. Inches.	Circum. Inches.	Weight per ft., pounds.	Breaking Stress, tons of 2000.	Working load, tons of 2000.	Circum. of Rope of equal strength, inches.	Per foot.
2 1/2	7	7.75	7.1	15	15 1/2	\$1.00
2	6 1/4	6.11	65	13	14 1/2	.78
1 1/2	5 1/2	5.09	54	11	13	.69
1 1/4	5	4.00	44	9	12	.58
1 1/8	4 3/4	3.55	39	8	11 1/2	.53
1 1/2	4 1/4	2.90	33	6 1/2	10 1/4	.43
1 1/4	4	2.42	27	5 1/2	9 1/2	.36
1 1/8	3 1/2	1.95	20	4	8	.29
1	3 1/8	1.53	16	3	7	.26
3/4	2 3/4	1.16	11.50	2 1/2	6	.20
2 3/8	2 3/8	0.85	8.64	1 3/4	5	.16
2	2	0.60	5.13	1 1/4	4 1/2	.14
1 3/4	1 3/4	0.47	4.27	1	4	.12
1 1/2	1 1/2	0.37	3.48	3/4	3 1/2	.10
1 1/4	1 1/4	0.26	2.50	3/4	3	.08

TRANSMISSION AND STANDING ROPES.  
7 Wires to the Strand.

IRON.						
Diam. Inches.	Circum. Inches.	Weight per ft., pounds.	Breaking Stress, tons of 2000.	Working load, tons of 2000.	Circum. of Rope of equal strength, inches.	Per foot.
1 1/2	4 3/4	3.37	36	9	10 3/4	\$0.48
1 1/4	4 1/4	2.77	30	7 1/2	10	.39
1 1/8	4	2.28	25	6 1/4	9 1/4	.34
1 1/2	3 1/2	1.82	20	5	8	.27
1 1/4	3 1/8	1.50	16	4	7	.23
1 1/8	2 3/4	1.12	12.3	3	6 1/4	.19
1 1/2	2 3/8	0.88	8.8	2 1/4	5 1/4	.14
1 1/8	2 1/8	0.70	7.6	2	5	.12
1 1/2	2	0.57	5.8	1 1/2	4 3/4	.10 1/2
1 1/4	1 3/4	0.41	4.1	1	4	.08
1 1/8	1 1/2	0.31	2.83	3/4	3 1/4	.07
1 1/2	1 3/8	0.23	2.13	1/2	2 3/4	.05 1/2
1 1/8	1 1/8	0.19	1.65	1/2	2 1/2	.05
1 1/2	1	0.16	1.38	1/2	2 1/4	.04
1 1/4	7/8	0.125	1.03	1/2	2	.03 1/2

## CRUCIBLE STEEL.

IRON.						
Diam. Inches.	Circum. Inches.	Weight per ft., pounds.	Breaking Stress, tons of 2000.	Working load, tons of 2000.	Circum. of Rope of equal strength, inches.	Per foot.
2 1/2	7	7.75	164.69	32.9	15 1/2	\$1.52
2	6 1/4	6.11	132.37	26.5	14 1/2	1.20
1 1/2	5 1/2	5.09	108.13	21.63	13	1.00
1 1/4	5	4.00	97.17	19.44	12	.80
1 1/8	4 3/4	3.55	86.38	17.3	11 1/2	.71
1 1/2	4 1/4	2.90	72.33	14.46	10 1/4	.60
1 1/4	4	2.42	50.17	10.	9 1/2	.50
1 1/8	3 1/2	1.95	38.	7.7	8	.41
1	3 1/8	1.53	29.2	5.8	7	.34
3/4	2 3/4	1.16	21.55	4.	6	.27
2 3/8	2 3/8	0.85	14.99	3.	5 1/2	.21
2	2	0.60	12.53	2.5	5 1/4	.18
1 3/4	1 3/4	0.47	8.81	1.75	5 1/4	.17
1 1/2	1 1/2	0.37	7.52	1.5	4 3/4	.15

Siemens-Martin (open-hearth) Steel and Bessemer Steel Ropes the same list price as iron ropes.

The prices and weights above stated are for ropes with hemp centers. For ropes made with wire centers, add TEN PER CENT. to these prices and weights.

GALVANIZED WIRE ROPES.  
For Ships' Rigging, Guys for Derricks, etc.

IRON.						
Diam. Inches.	Circum. Inches.	Weight per ft., pounds.	Breaking Stress, tons of 2000.	Working load, tons of 2000.	Circum. of Rope of equal strength, inches.	Per foot.
5 1/2	26 1/2	11	43	\$0.10 1/2	\$0.11	
5 1/4	24 1/2	10 1/2	40	.10 1/2	.11	
5	22	10	35	.10 1/2	.11 1/2	
4 3/4	20 1/2	9 1/2	33	.10 1/2	.11 1/2	
4 1/2	18	9	30	.10 1/2	.11 1/2	
4 1/4	16	8 1/2	26	.10 1/2	.11 1/2	
4	14 3/4	8	23	.10 1/2	.11 1/2	
3 3/4	12	7 1/2	20	.10 1/2	.11 1/2	
3 1/2	10 3/4	7	16	.10 3/4	.12	
3 1/4	9 1/2	6 1/2	14	.11	.12	
3	8	6	12	.11	.12	
2 3/4	6 3/4	5 1/2	10	.11	.11	
2 1/2	5 1/2	5	8 1/2	.11 1/2	.12	
2 1/4	4 1/2	4 1/2	7	.12	.13	
2	3 1/2	4	6	.13	.14	
1 3/4	2 1/2	3 1/2	5	.14	.16	
1 1/2	2	3	3 1/2	.16	.17	
1 1/4	1 1/2	2 1/2	2 1/2	.17	.18	
1	1 1/4	2	2	.18	.23	
3/4	1 1/4	1 1/2	1	.23		

PLIABLE TILLER ROPES.  
With 6 strands of 42 wires each. Hemp centers in strands and rope.

Diameter, Inches.	Breaking Stress in Tons of 2000.	Bright. Per foot.	Tinned. Per foot.
1	16	\$0.30	\$0.33
3/4	12	.25	.28
5/8	9	.21	.23
1/2	5 1/2	.16	.18
3/8	3 1/4	.12	.14
2 1/2	2 1/2	.09	.11

## SASH CORD.

SASH CORD.			
Trade Numbers.	Diameter, Inches.	Bright or Annealed Iron. Per foot.	Tinned Iron. Per foot.
26	1/4	\$0.02 1/2	\$0.03 1/4
27	3/8	.02	.02 1/2
27 1/2	1/2	.01 1/2	.02
28	3/4	.01	.01 1/2
29	1 1/4	.00 1/2	.00 3/4





THORNTON N. MOTLEY, NEW YORK.

# LINK BELTING, SPROCKET WHEELS, ATTACHMENTS,

For transmission of power in drainage, pumping, mining, etc.

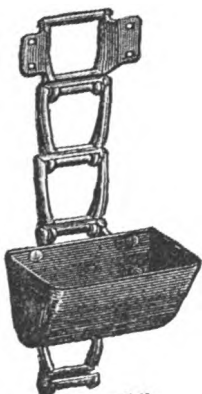


Fig. 2389.

For use in mills, factories, machine shops, elevators, etc.

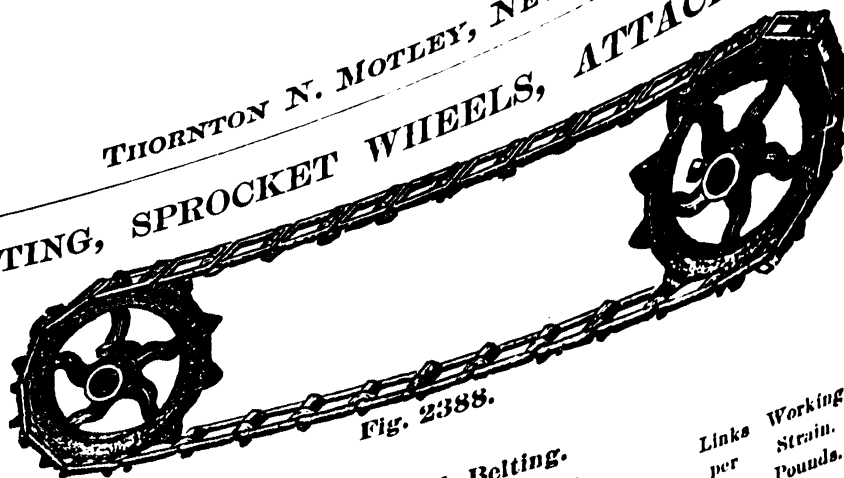


Fig. 2388.

## Prices, Link Belting.

Nos.	Links per foot.	Working Strain. Pounds.	Price per foot.	Approximate in Leather Belting.
25	13.3	75	\$0.13	1 in. s'gle.
32	10.5	150	.13	1 1/2 "
33	8.6	200	.12	2 "
34	8.6	225	.13	2 1/2 "
35	7.4	250	.14	2 1/2 "
42	8.8	300	.16	3 "
45	7.4	350	.16	3 1/2 "
51	10.5	375	.20	3 1/2 "
52	8.	500	.25	4 "
55	7.4	450	.22	4 "
57	5.2	600	.24	6 "
62	7.3	650	.30	6 1/2 "

Nos.	Links per foot.	Working Strain. Pounds.	Price per foot.	Approximate in Leather Belting.
66	6.	700	\$0.30	7 in. s'gle.
67	5.2	700	.30	7 "
75	4.6	750	.35	7 1/2 "
77	5.2	800	.35	8 "
78	4.6	1000	.40	10 "
83	3.	1200	.45	12 "
85	3.	1300	.50	9 in. d'ble.
88	4.6	1200	.50	8 "
95	3.	1600	.60	10 "
103	4.	1800	.75	12 "
105	2.	1500	.70	10 "
106	2.	1700	.90	11 "

Nos.	Links per foot.	Working Strain. Pounds.	Price per foot.	Approximate in Leather Belting.
107	2.	1600	\$0.80	10 in. d'bl.
108	2.55	2000	.80	13 "
109	2.	1900	.90	12 "
114	3.66	2000	1.10	13 "
122	2.	2200	1.50	15 "
124	3.	2500	1.30	17 "
146	2.	2800	1.40	19 "
600	2.	7000	1.00	
1050	1.2	12000	1.30	
1075	1.2	16000	1.40	
1200	1.	7000	.90	

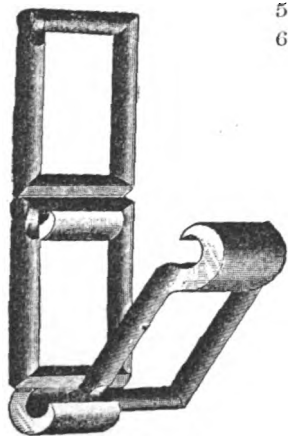


Fig. 2390.

Price for Giant Chain will be given upon application.

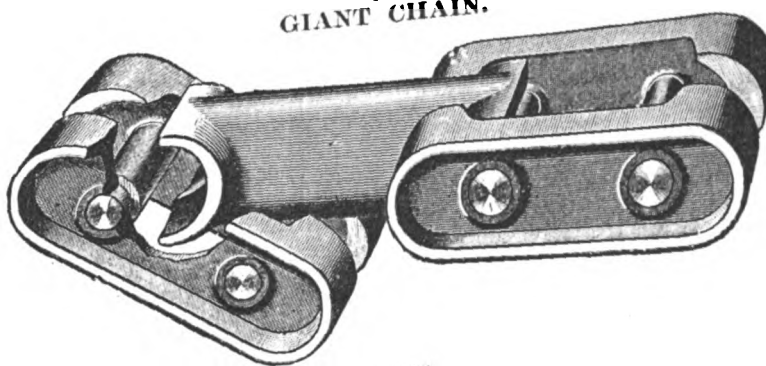


Fig. 2391.

## GIANT CHAIN.

Prices for Sprocket Wheels and Attachments for Link Belt, will be given upon application.

Fig. 2392.

## ELEVATOR BUCKETS.

MALLEABLE IRON BUCKETS.  
Pattern "A." Pattern "B."

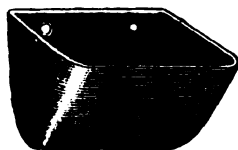


Fig. 2393.

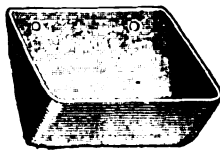


Fig. 2394.

Mill Bucket.

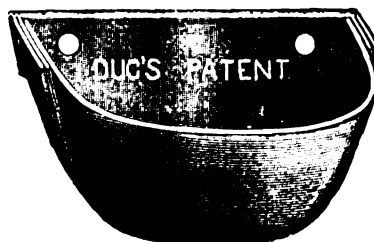


Fig. 2395.

STEEL BUCKETS.

Ore Bucket.

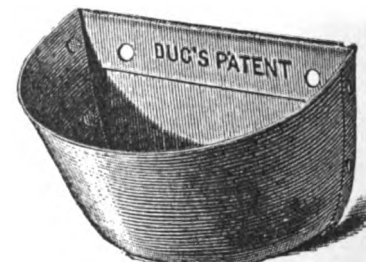


Fig. 2396.

## Prices, A and B Buckets, Figs. 2393 and 2394.

Length. Inches.	Width. Inches.	Depth. Inches.	Capacity. Cubic Inches.	Capacity. Quarts.	Pattern.	Each.	Length. Inches.	Width. Inches.	Depth. Inches.	Capacity. Cubic Inches.	Capacity. Quarts.	Pattern.	Each.
4	1 1/2	1	4		A	\$0.25	8	5	4 1/4	108	1.6	A	.80
4	3	2 1/2	15	.2	A	.35	10	6	5	160	2.37	A	1.10
5	4	3	28	.4	A	.45	10	4	3 1/2	60	0.9	B	.85
6	4	3 1/2	50	.74	A	.50	12	7	6	300	4.4	A	1.50
7	4 1/2	4	58	.86	A	.65	12	5 1/2	4 1/2	135	2.	B	1.10

The Malleable Iron Buckets are cast in one piece and carefully annealed, making them light and very serviceable.

## Prices, Mill Buckets, Fig. 2395.

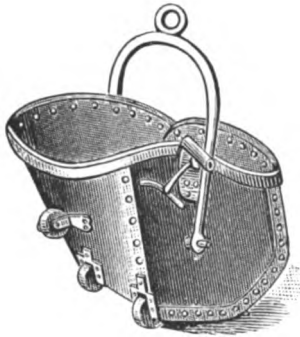
Length. Inches.	Width. Inches.	Depth. Inches.	Capacity. Cubic Inches.	Each.	Length. Inches.	Width. Inches.	Depth. Inches.	Capacity. Cubic Inches.	Each.	Length. Inches.	Width. Inches.	Depth. Inches.	Capacity. Cubic Inches.	Each.
4	2 3/4	3	133 1/2	\$0.37 1/2	7	4 5/8	4 1/8	65	\$0.65	3 1/2	2 5/8	2 3/4	113 1/4	\$0.15
4 1/2	2 7/8	3	17 1/2	.42	8	5 3/8	4 3/4	104	.70	4	2 3/4	3	133 1/4	.18
5	3 1/4	3 1/8	24 1/2	.47	9	5 3/4	4 7/8	131	.78	4 1/2	2 7/8	3	17 1/2	.20
5 1/2	3 5/8	3 1/8	28	.50	10	6 1/8	5 1/8	158	.85	5	3 1/4	3 1/8	24 1/2	.23
6	4 1/8	3 5/8	46	.55						5 1/2	3 5/8	3 1/8	28	.25

## Prices, Ore Buckets, Fig. 2396.

Length. Inches.	Width. Inches.	Depth. Inches.	Capacity. Cubic Inches.	Each.	Length. Inches.	Width. Inches.	Depth. Inches.	Capacity. Cubic Inches.	Each.	Length. Inches.	Width. Inches.	Depth. Inches.	Capacity. Cubic Inches.	Each.
6	4 1/8	3 5/8	46	\$0.30	7	4 5/8	4 1/8	65	.38	8	5 3/8	4 3/4	104	.40
					9	5 3/4	4 7/8	131	.50					



## HORSE POWER SELF-DUMPING COALING TUB.



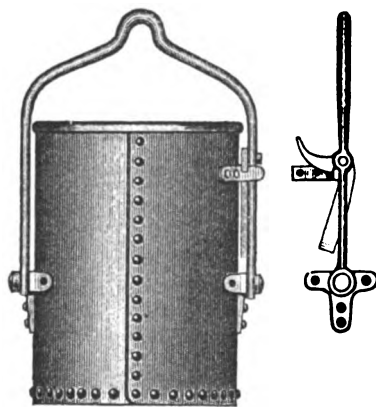
**Fig. 2397.**

This Tub is made with either Side or Back Lock. For extra sizes not on the list estimates will be furnished.

No. 1, Holding $\frac{1}{8}$ of a ton.....	\$30.00
" 2, " $\frac{1}{8}$ " .....	32.50
" 3, " $\frac{1}{8}$ " .....	35.00
" 4, " $\frac{1}{4}$ " .....	40.00
" 5, " $\frac{1}{2}$ " heavy.....	45.00

### IRON COALING TUBS.

**Same sizes and prices as steel, but heavier.**



**Fig. 2401.**

**This Bucket is designed for builders, miners and contractors. It is made in best possible manner, well riveted, with bands around top.**

**Prices, Iron Buckets, Figs. 2401 & 2402.**

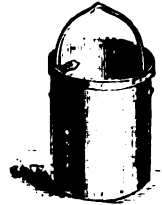
Style.	Diameter. Inches.	Depth. Inches.	Thickness of Iron. Inches.	Each.
Cylindrical .....	24	36	$\frac{3}{16}$	\$50.00
Cylindrical .....	30	42	$\frac{3}{16}$	65.00
Barrel Shaped ...	24	36	$\frac{3}{16}$	65.00
Barrel Shaped ...	30	42	$\frac{3}{16}$	80.00

**Buckets any size or shape and any thickness of iron, made to order at special prices.**

**HEAVY ASH AND COAL BUCKETS.**  
No. 1. Nos. 2, 3 and 4.



**Fig. 2398.**

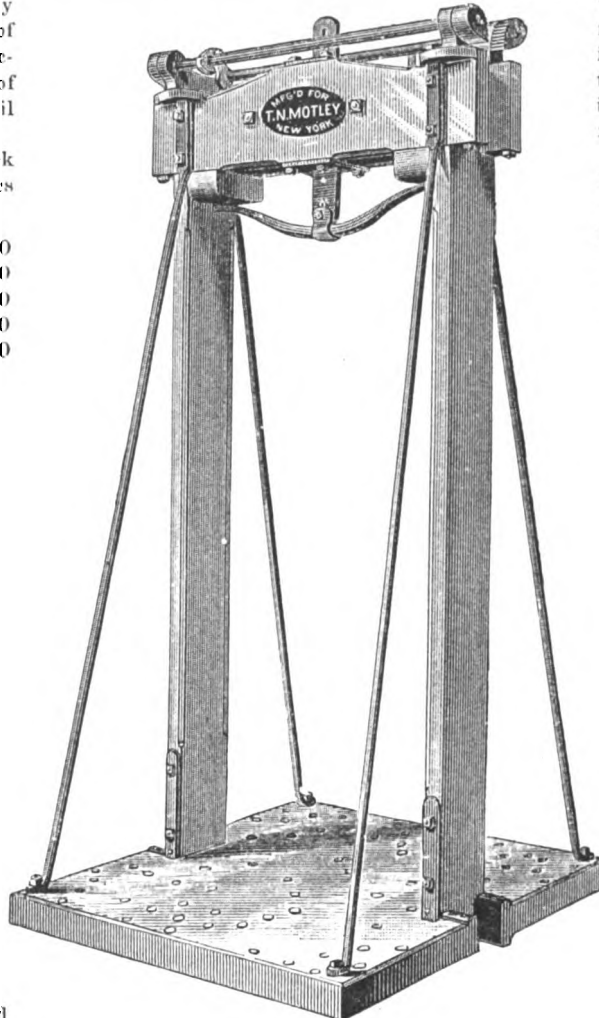


**Fig. 2399.**

No. 1, 16 ins. diam., 20 ins. high, side bbls., \$	8.50
" 2, 14 " 18 " with bail.	9.00
" 3, 16 " 18 "	10.00
" 4, 18 " 20 "	12.00

No. 2, 3 and 4 furnished with bails inside or outside.

### IMPROVED SAFETY PLATFORM CAGE.



**Fig. 2403.**

This Mining Cage is strong, reliable, and well made. The safety device is simple and effective, the spring acts upon the dogs at the instant of breakage of rope, driving the teeth of dogs into the wooden guides in which the cage runs.

**Prices, Fig. 2403.**

No. 1, Width of bottom, 4 to 4½ feet; length, 4 to 5 feet; thickness of floor, 3 inches. Height between floor and under side of upper cross beams, 6 to 6½ feet. Side uprights, 3x6 inches. Weight, 700 to 800 lbs. Complete, with Safety Device.....\$175.00.

No. 2, Width of bottom, 4½ to 5½ feet; length, 5 to 6½ feet; thickness of floor, 4 inches. Height between floor and under side of upper cross beams, 6 to 7 feet; side uprights, 4x8 inches. Weight, 800 to 900 lbs. Complete, with Safety Device..... \$200.00

**Extra Heavy Cages built to order.**

## STEAM POWER SELF-DUMPING COALING TUB.



**Fig. 2400.**

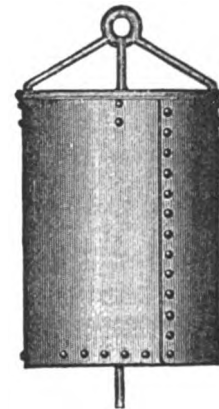
This Tub is made with either Side or Back Lock. For extra sizes not on the list estimates will be furnished.

No. 6, Holding	600 lbs. of Coal.....	\$ 65.00
" 7, "	700 " " .....	75.00
" 8, "	1120 " " .....	90.00
" 9, "	2240 " " .....	150.00

### IRON COALING TUBS.

**Same sizes and prices as steel, but heavier.**

### IMPROVED WATER BUCKET.



**Fig. 2402.**

**This Bucket is especially designed for miners, contractors, etc. The valve is self-operating, simple and effective.**

### Prices, Steel Buckets, Figs. 2401 & 2402.

Style.	Diameter. Inches.	Depth. Inches.	Thickness of Steel. Inches.	Each.
Cylindrical .....	24	36	$\frac{3}{8}$	\$60.00
Cylindrical .....	30	42	$\frac{3}{8}$	75.00
Barrel Shaped ...	24	36	$\frac{3}{8}$	75.00
Barrel Shaped ...	30	42	$\frac{3}{8}$	100.00

Buckets any size or shape and any thickness of steel made to order at special prices.

THORNTON N. MOTLEY, NEW YORK.

# DERRICK WINCHES AND HOISTING CRABS.

PLAIN WINCH,  
Single Geared.

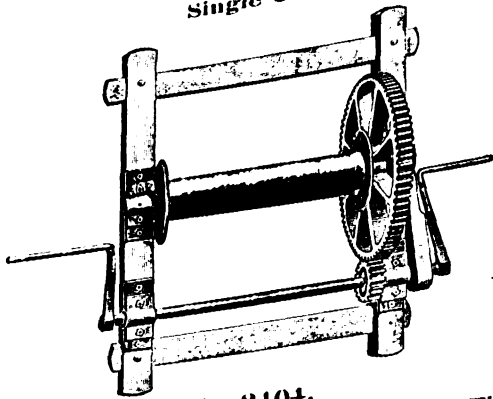


Fig. 2404.

## Price and Description Derrick Winch, Fig. 2404.

This Single Geared Derrick Winch is simple, strong and has a capacity with two-man power of 5675 pounds. It is made from the best of materials, the frame being 4x4 select seasoned oak and 40x50 inches outside dimensions.

The drum is 26 inches long between 12 inch flanges, and is 6 inches in diameter. The cranks are 18 inches leverage, and the gears are 4 to 1. The shafts are made from the best refined wrought iron, 1½ inches in diameter, and the boxes are metal lined. The gears are cast from the best American iron, and are calculated to withstand any ordinary strain.

Each .....\$30.00

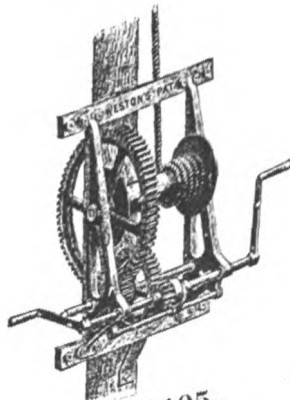


Fig. 2405.

## Prices, Safety Derrick Winches, Figs. 2405 and 2406.

Nos.	Size of Barrel.		Capacity.		Each.	Extra for Each 6 ins. of barrel.
	Diameter.	Length.	Direct.	With Single Block.		
31	4½ ins.	12 ins.	1½ ton	1 ton	\$35.00	\$5.00
32	5 "	16 "	1 "	2 "	45.00	6.00
33	6 "	20 "	1½ "	3 "	65.00	7.50
35	7 "	24 "	2½ "	5 "	100.00	10.00

Winches for double poles always sent unless otherwise ordered. The handles of these winches cannot fly back and the load is always self-sustained by the action of the automatic safety brake. To lower the load the handles must be turned backwards.

PORTABLE REVOLVING WINCH.

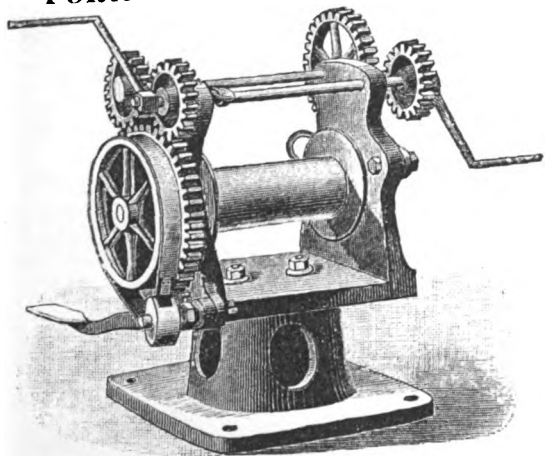


Fig. 2407.

## Price, Portable Revolving Winch, Fig. 2407.

This Winch is so constructed that the hoisting head may be turned completely around upon the base, thus permitting the fall to be led in any desired direction without changing the position of the whole machine. It is double geared but so arranged that it can be used with single gear only for light hoisting, by simply sliding one shaft.

Capacity, 2 tons, direct from barrel.....each, \$100.00

## Prices, Safety Crabs, Fig. 2408.

Nos.	Size of Barrel.		Capacity.		Each.	Extra for Each 6 ins. of barrel.
	Diameter.	Length.	Direct.	With Single Block.		
21	4½ ins.	12 ins.	1½ ton	1 ton	\$35.00	\$5.00
22	5 "	16 "	1 "	2 "	45.00	6.00
23	6 "	20 "	1½ "	3 "	65.00	7.50
25	7 "	24 "	2½ "	5 "	100.00	10.00

These Crabs are furnished with hand wheel for hand rope or chain instead of handles, at same prices. Also without extra charge, with capstan barrel instead of straight barrel.

The handles of these crabs cannot fly back, and the load is always self-sustained by the action of the automatic safety brake.

PATENT SAFETY  
HOISTING CRAB.

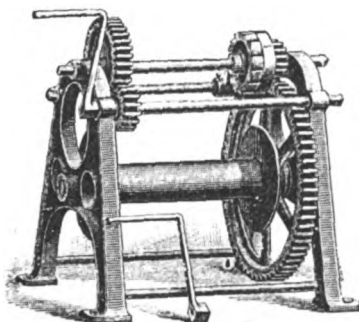


Fig. 2408.

DOUBLE PURCHASE HOISTING CRAB.

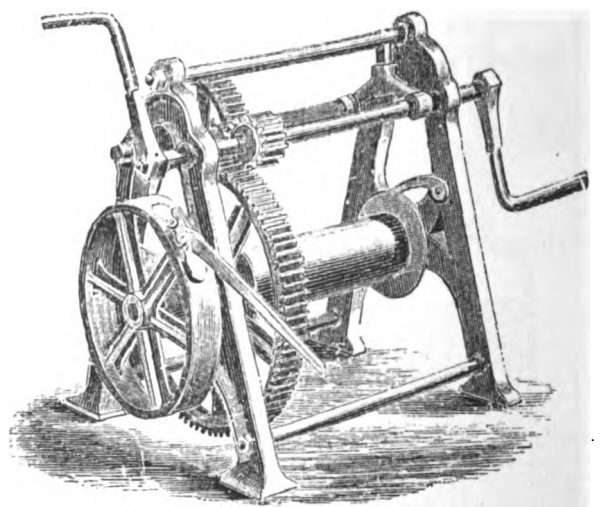


Fig. 2409.

## Prices, Hoisting Crabs, Fig. 2409.

SINGLE PURCHASE.				
Nos.	Will Lift with 2 and 3. Sheave Pulley Blocks.	With Strap Brake. Each.	With Screw Brake. Each.	Brass Bushing Extra, Each.
1	2 tons	\$27.00	\$30.00	\$6.00
2	3 "	30.00	33.00	6.00
3	4 "	35.00	38.00	7.00
4	5 "	40.00	45.00	7.00
5	6 "	52.00	57.00	8.00
6	9 "	62.00	68.00	8.00
DOUBLE PURCHASE.				
Nos.	Will Lift with 2 and 3. Sheave Pulley Blocks.	With Strap Brake. Each.	With Screw Brake. Each.	Brass Bushing Extra, Each.
10	4 tons	\$40.00	\$53.00	\$9.00
11	5 "	46.00	60.00	9.00
12	6 "	59.00	72.00	10.00
13	9 "	69.00	82.00	11.00
14	12 "	82.00	97.00	11.00
15	15 "	104.00	130.00	15.00
16	18 "	132.00	157.00	20.00
17	24 "	180.00	215.00	21.00

The Double Purchase Crabs can be used either single or double gear.

## HORSE HOISTS AND HORSE POWER.

## HORSE POWER QUARRYING HOISTER.

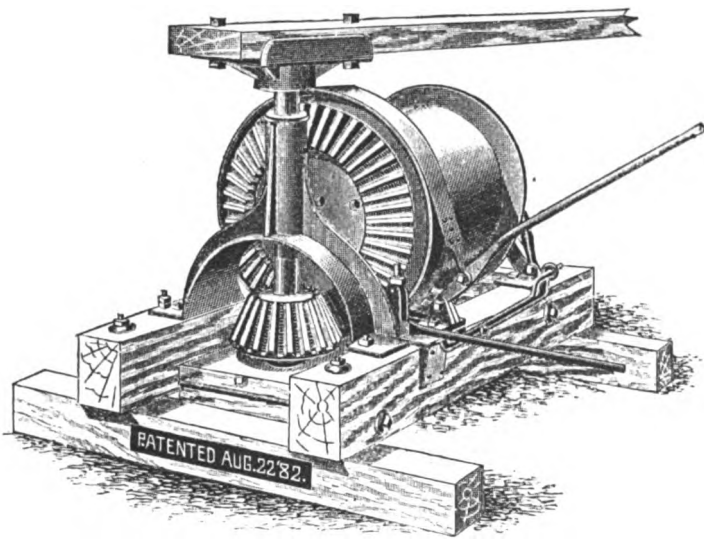


Fig. 2410.

With this machine a horse can raise a stone of sufficient size to make a car load, or where any other special heavy work is required. Powerful web gears, heavy steel shafts. No clutches to throw out and in gear. The efficiency of the machine is greatly increased by a safety attachment, which is worked automatically by the lever, which throws the power out and in gear while the weight is being raised, thereby securing safety to both workman and horse.

## Capacity, Dimensions and Weight.

Load for one horse: Single line, 3 tons; single block, 6 tons; double block, 9 tons. Drum, 22 inches long by 20 inches diameter. Height, 2 feet 10 inches. Bed frame, 5 feet 3 inches by 2 feet 9 inches wide. Weight, 1200 lbs.  
Each.....\$120.00

## DERRICK HORSE POWER WITH BOOM HOISTER.

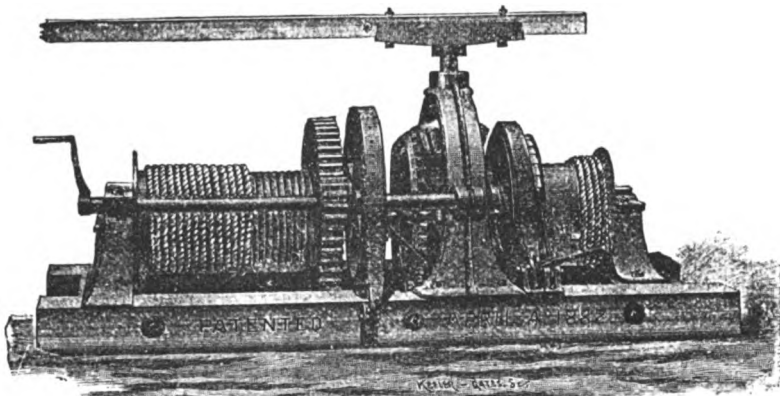


Fig. 2412.

With this machine a horse can raise eight or ten tons, and at the same time the boom can be raised by the horse while the whole weight is on the derrick, or lowered if required, or any one part can be worked independent of another, or the whole machine can be worked together, thus enabling the builder to place a stone exactly where he may require it. The brake is so simple and powerful that a light boy can hold an immense heavy stone within an inch of where it is to be laid, and the brake on the boom drum enables the boy to lower the boom to any desired place with the greatest speed. With a long boom it gives great facilities in work, and the boom hoister does away with the tedious old way of raising the boom by hand with six or eight men, thus obviating a great delay in the work. For quarrying, no other machine is equal to it. A stone can be placed in or out the full sweep of the boom, giving the stone cutter great advantage in his work, or loading a cut stone on a truck or car placed anywhere within range of the boom.

## Capacity, Dimensions and Weight.

Load for one horse: Single line, 2½ tons; single block, 5 tons; double block, 10 tons. Corded drum, 28 inches long by 17 inches diameter. Drum for boom hoist, 12 inches long by 1½ inches diameter. Bed frame, 8 feet long by 3 feet 8 inches wide. Height over all, 4 feet. Weight, 2500 lbs.  
Each.....\$225.00

## CONTRACTORS' HOISTING HORSE POWER.

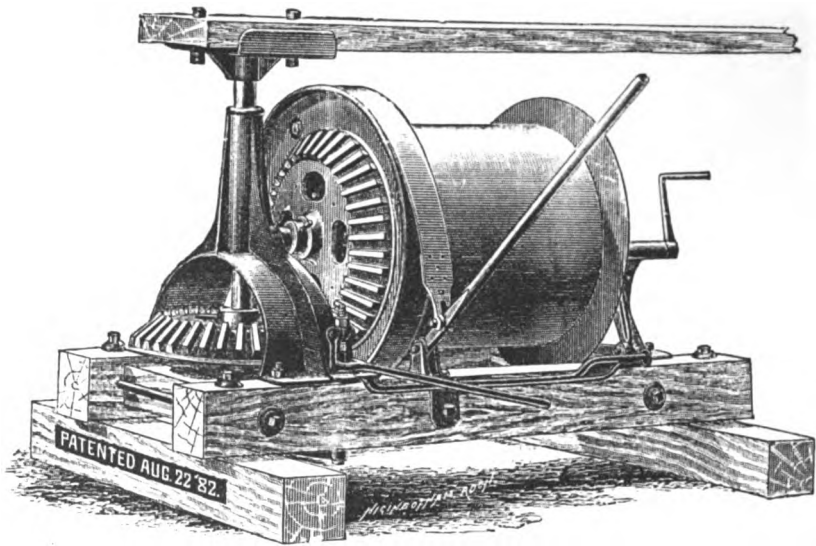


Fig. 2411.

The above cut is an illustration of a horse power for raising or lowering stone or any heavy material, is especially adapted for bridge foundations or approaches, and also stone quarries. It works in cast steel shafts. The gear wheels can be thrown out or in gear while the machine is in motion. Flanges on pitch line of gear to prevent them from breaking one another; has gearing attachment to take up slack rope by hand and a powerful brake to hold the weight wherever required. The machine is also provided with a safety attachment which is operated automatically with the lever which throws the power out or in gear, so that when a weight is suspended the drum is held in position by the iron dog which works in ratchet on end of drum, thus preventing accident in case of breaking any of the parts. It is all made of iron or steel excepting the sills and sweeps.

## Capacity, Dimensions and Weight.

Load for one horse: Single line, 1½ tons; single block, 3 tons; double block, 5 tons. Gears, 36 to 36 teeth. Speed, single block, 15 feet per minute. Drum, 22 inches long by 21 inches diameter. Weight, 1000 lbs. Bed frame, 5 feet 3 inches long by 2 feet 9 inches wide. Height, 2 feet 10 inches.  
Each.....\$100.00

## MINERS' SLATE AND COAL HOISTER.

This machine is designed for the purpose of raising slate, coal, or when any other light lifting is required, the motion being fast. 1500 to 1800 lbs. can be easily handled at the rate of 40 feet per minute, or by the use of a single block 3500 lbs., at the rate of 20 feet per minute.

Dimensions, weight and price, same as Fig. 2411.

## IRON HORSE POWER, ONE HORSE.

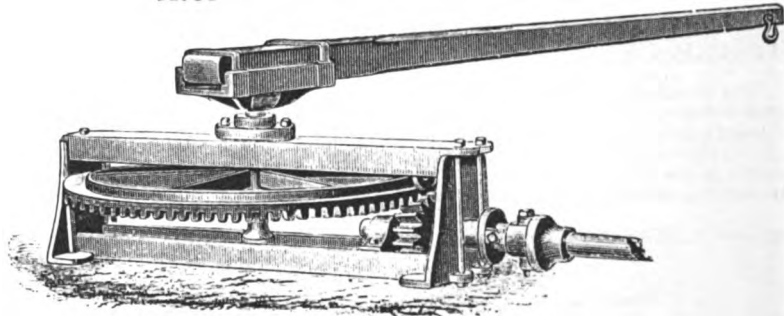


Fig. 2413.

This horse power is especially designed for driving pumps, agricultural machinery, etc. Furnished with universal joint (as in cut) with stub end to weld the horizontal shaft to.

## Dimensions.

Large wheel, 30 inches diameter. Pinion, 4½ inches diameter. Frame, 3 feet 2 inches long, 1 foot wide, 10 inches high. Tongue, 10 feet long.  
Each.....\$55.00

THORNTON N. MOTLEY, NEW YORK.

SINGLE CYLINDER IMPROVED PATENT FRICTION DRUM PORTABLE HOISTING ENGINE  
WITH BOILER AND FIXTURES COMPLETE ON BED PLATE.

### Description.

Specially adapted for pile driving, railroads, contractors, bridge builders, coal yards, docks, ships, quarries and general hoisting purposes.

Fig. 2414 represents my Improved Patent Friction Drum Hoisting Engine, with boiler and fixtures complete, which is adapted for all general hoisting purposes, is of new design, made from new patterns and embodies the results of many years' experience. It is particularly simple in design and construction, and is properly proportioned throughout in accordance with its cylinder power.

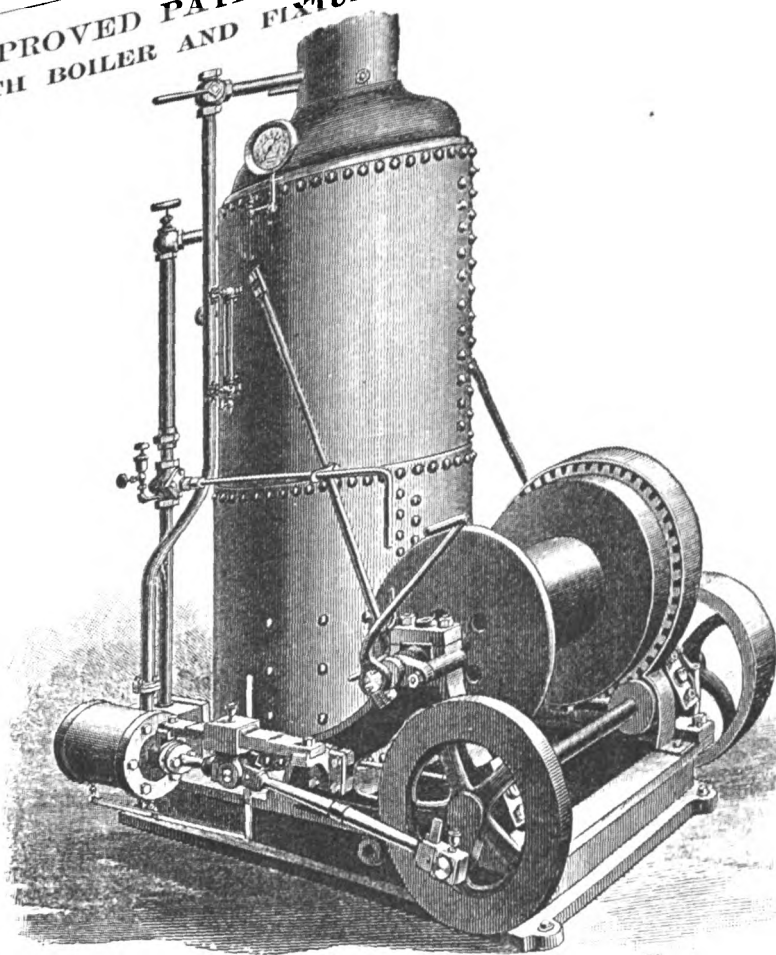


Fig. 2414.

### Description.

Only the best quality of material is used, and the workmanship, being done on special tools and with great care, is absolutely accurate, as all parts are made to gauge on the duplicate part system, which insures perfect interchangeability.

Finished parts for all sizes of engines are always kept in stock, thus enabling my customers to obtain duplicate parts of their engines at once, without the vexatious delay which is entailed when engines are purchased of local makers.

### Prices and Dimensions.

Size, Number of Engines.	Horse Power Usually Rated.	Dimensions of Cylinders		Weight Hoisted Single Rope. Usual Speed. Lbs.	Suitable Weight of Pile Driv- ing Ham- mer for Quick Work. Lbs.	Dimensions of Hoisting Drums.			Dimensions of Bed Plates.		Dimensions of Boilers.			Estimated Shipping Weights Complete. Lbs.	Prices, Engines with Boilers and Fixtures, No Dock, Wheels or Foot Brakes.	Prices, Engines with Boilers and Fixtures, including Foot Brakes.	Prices, Extra for Cast Iron Dock Wheels.
		Diam. Inches.	Stroke. Inches.			Diam., Body between Flanges. Inches.	Length Body between Flanges. Inches.	Diam. Flanges. Inches.	Width, Inches.	Length, Inches.	Diam. Shell. Inches.	Height Shell. Inches.	Number of 2 Inch Tubes.				
1	4	5	8	1200	1000	10	20	22	38	59	28	63	40	3500	\$625.00	\$650.00	\$35.00
2	6	6 $\frac{1}{4}$	8	1500	1250	10	20	22	38	59	28	69	40	3750	675.00	700.00	40.00
2 $\frac{1}{2}$	8	6 $\frac{1}{4}$	10	1750	1500	12	20	24	41	67	30	72	44	4250	775.00	800.00	45.00
3	10	7	10	2500	1800	12	20	24	41	67	32	75	48	4600	825.00	850.00	50.00
3 $\frac{1}{2}$	11	7	10	2500	2000	14	22	26	45	70	34	78	52	5000	925.00	950.00	55.00
4	12 $\frac{1}{2}$	8 $\frac{1}{4}$	10	4000	2500	14	22	26	45	70	36	75	57	5500	975.00	1000.00	60.00
4 $\frac{1}{2}$	15	8 $\frac{1}{4}$	10	4000	2800	14	23	29	47	72	36	81	57	6500	1050.00	1075.00	65.00
5	20	8 $\frac{1}{2}$	12	6000	4000	16	26	33	54	84	40	84	80	8500	1300.00	1325.00	
6	25	10	12	8000	5000	16	26	33	54	84	42	90	88	9500	1350.00	1375.00	

### DOUBLE CYLINDER IMPROVED PATENT FRICTION DRUM PORTABLE HOISTING ENGINES.

The Double Cylinder Engines are similar in all respects to the Single Cylinder Engines, Fig. 2414, except that they have the special feature of having no centers, the engines being connected at an angle of 90°, thus being much easier to start, handle, etc. This is of special importance for many kinds of hoisting, particularly for quarry and other heavy work, as they are always ready to start the load easily and steadily, while a Single Cylinder Engine will occasionally get caught on the center. I therefore recommend the Double Cylinder Engine for all general hoisting purposes, where these advantages more than outweigh the difference in the first cost of the engine. Inspirators are supplied for feeding the boilers, instead of pumps, as on the Single Cylinder Engines. Foot brakes are recommended, although not actually required for ordinary hoisting purposes, except where it is desired to lower heavy weights or long distances, etc.

### Prices and Dimensions.

Size, Number of Engines.	Horse Power Usually Rated.	Dimensions of Cylinders		Weight Hoisted Single Rope. Usual Speed. Lbs.	Suitable Weight of Pile Driv- ing Ham- mer for Quick Work. Lbs.	Dimensions of Hoisting Drums.			Dimensions of Bed Plates.		Dimensions of Boilers.			Estimated Shipping Weights Complete. Lbs.	Prices, Engines with Boilers and Fixtures, No Dock, Wheels or Foot Brakes.	Prices, Engines with Boilers and Fixtures, with Foot Brakes.	Prices, Extra for Cast Iron Dock Wheels.
		Diam. Inches.	Stroke. Inches.			Diam., Body between Flanges. Inches.	Length Body between Flanges. Inches.	Diam. Flanges. Inches.	Width, Inches.	Length, Inches.	Diam. Shell. Inches.	Height Shell. Inches.	Number of 2 Inch Tubes.				
7	8	5	8	2000	1500	12	22	24	47	64	32	75	48	4750	\$925.00	\$950.00	\$50.00
8	12	6 $\frac{1}{4}$	8	3000	2000	14	22	26	50	68	36	75	57	5300	1025.00	1050.00	60.00
8 $\frac{1}{2}$	16	6 $\frac{1}{4}$	10	4000	2800	14	26	26	54	73	36	81	57	7500	1250.00	1275.00	
9	20	7	10	5000	4000	14	26	26	54	73	40	84	80	8500	1300.00	1325.00	
10	30	8 $\frac{1}{4}$	10	8000	6000	14	27	29	57	80	42	90	88	9500	1450.00	1500.00	
11	40	8 $\frac{1}{2}$	12	10000	8000	16	31	36	70	97	48	96	115	15000	2100.00	2150.00	
12	50	10	12	12000	9000	16	31	36	70	97	50	102	124	17000	2300.00	2350.00	

Reversible Link Motion and Friction Drum Engines Combined made to order at five per cent. advance on above prices. Every Engine tested and guaranteed.



## DOUBLE CYLINDER PATENT FRICTION DRUM HOISTING ENGINE. WITHOUT BOILER.

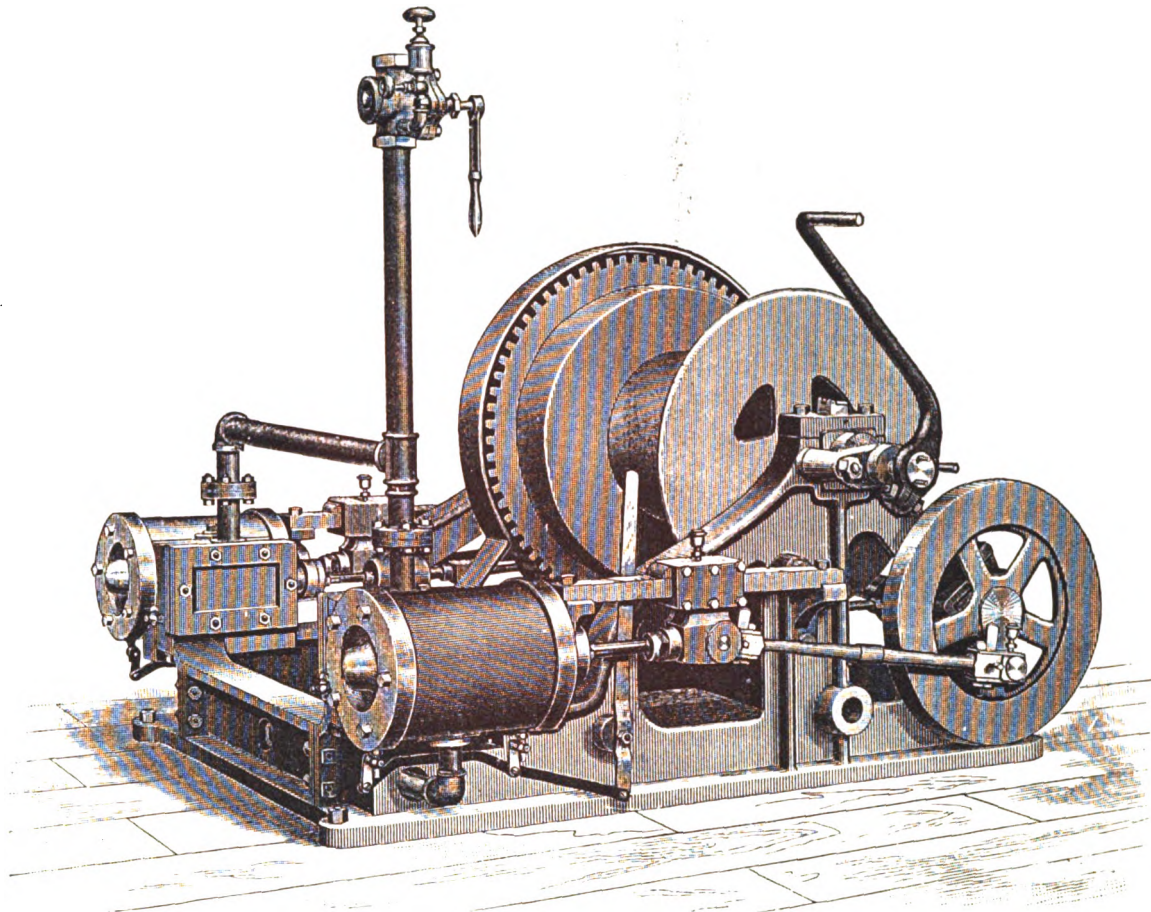


Fig. 2415.

Specially adapted for contractors, railroads, bridge builders, coal yards, docks, warehouses, steam lighters, barges, steamboats, sailing vessels and general hoisting.

These Engines have double cylinders and patent friction drums, and are adapted for all general hoisting purposes, as well as the special ones enumerated above. They are very compact and simple in construction, and having no centers are easily handled, and are always ready to start. They are well adapted for use on steamers and sailing vessels, for hoisting cargo, sails, etc., and also for driving the ship's pumps. For this latter purpose a grooved wheel is generally put on the drum shaft next the spur wheel if rope is to be used, or a sprocket or chain wheel if chain is to be used for driving. The cylinder cocks of both cylinders are connected by rods, and are opened or closed simultaneously by means of a lever. This device is also of service in backing down a heavy load against the steam.

Foot Brakes are recommended, although not absolutely necessary for ordinary hoisting purposes, but where there is much lowering to be done they are desirable. For small mines they are well adapted, and many of them are in use for this purpose. When used in this connection the drums are lagged up about six inches larger in diameter than stated in the table, and foot brakes are used. The cost of lagging is extra.

### Prices and Dimensions.

Size, Number of Engine.	Horse Power Usually Rated.	Dimensions of Cylinders.		Weight, Hoisted Single Rope, Usual Speed, Lbs.	Dimensions of Hoisting Drums.		Size of Bed Plate.		Estimated Shipping Weight, Lbs.	Prices of Engines complete, without Boilers.	Prices of Engines complete, without Boilers, including Foot Brakes.	Prices Extra, for Cast Iron Dock Wheels.
		Diameter, Inches.	Stroke, Inches.		Diameter, Inches.	Length, Inches.	Width, Inches.	Length, Inches.				
32	6	5	6	1000	10	14	34	43	1200	\$425.00	\$450.00	\$20.00
33	8	5	8	1650	12	15	36	50	2000	500.00	525.00	25.00
34	12	6 $\frac{1}{4}$	8	2500	14	16	39	58	2500	575.00	575.00	25.00
35	20	7	10	3500	14	18	42	69	3000	675.00	675.00	30.00
36	30	8 $\frac{1}{4}$	10	6000	16	27	50	72	4500	775.00	775.00	50.00
37	40	8 $\frac{1}{2}$	12	8000	20	30	70	84	6500	1050.00	1050.00	
38	50	10	12	10000	20	30	70	84	7000	1150.00	1150.00	

## SINGLE CYLINDER PATENT FRICTION DRUM HOISTING ENGINE. WITHOUT BOILER.

These Engines are similar to Fig. 2415, but have only one cylinder. Every engine has a winch head on the drum shaft, and a band fly wheel on the crank shaft.

### Prices and Dimensions.

Size, Number of Engine.	Horse Power Usually Rated.	Dimensions of Cylinders.		Weight, Hoisted Single Rope, Usual Speed, Lbs.	Dimensions of Hoisting Drums.		Size of Bed Plate.		Estimated Shipping Weight, Lbs.	Prices of Engines complete, without Boilers.	Prices of Engines complete, without Boilers, including Foot Brakes.	Prices Extra, for Cast Iron Dock Wheels.
		Diameter, Inches.	Stroke, Inches.		Diameter, Inches.	Length, Inches.	Width, Inches.	Length, Inches.				
25	3	5	6	600	8	10	28	43	1000	\$325.00	\$350.00	\$20.00
26	4	5	8	1000	10	15	33	55	1500	375.00	400.00	20.00
27	6	6 $\frac{1}{4}$	8	1500	10	18	36	58	1700	425.00	450.00	22.50
28	10	7	10	2000	12	17	40	69	2200	475.00	500.00	25.00
29	15	8 $\frac{1}{4}$	10	3000	14	20	42	70	2900	525.00	550.00	30.00
30	20	8 $\frac{1}{2}$	12	5000	16	22	48	80	4000	750.00	800.00	45.00
31	25	10	12	6000	16	22	48	80	5000	850.00	900.00	55.00

Every Engine tested and guaranteed.



THORNTON N. MOTLEY, NEW YORK.

**SINGLE CYLINDER DOUBLE FRICTION DRUM HOISTING ENGINE**  
WITH BOILER AND FIXTURES, RATCHETS AND PAWLS, COMPLETE.

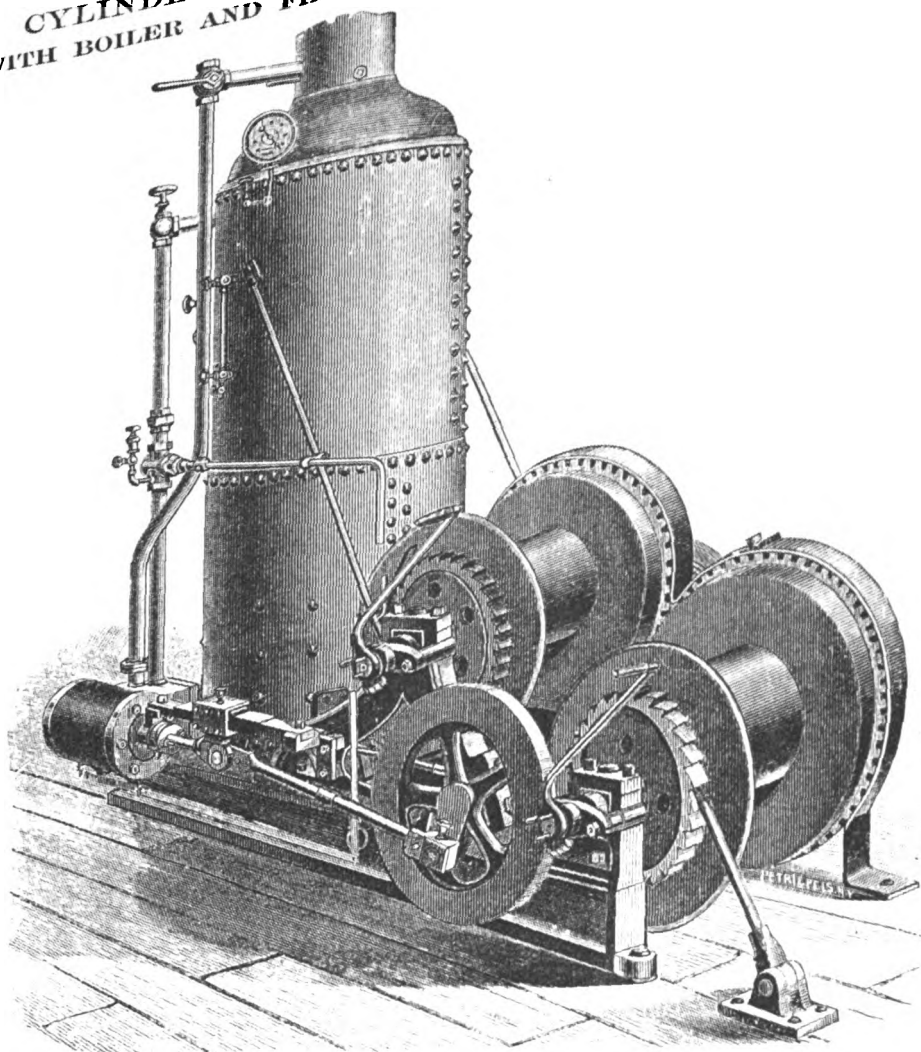


Fig. 2416.

Specially adapted for quarries, pile driving, dock and bridge building, railroads, etc.

The above cut represents my Single Cylinder Double Friction Drum Hoisting Engine, with Boiler and Fixtures Complete, and is particularly adapted for the uses specified above, which require the employment of two independent hoisting drums. For quarrying purposes, two derricks can be operated, or, if desired, one drum can be used for hoisting, and the other for topping the boom; and the use of the improved friction drum for this purpose is of great importance, as it obviates entirely any sudden strain on the derricks, guys, ropes, blocks and tackle, thereby rendering them less liable to accident, and reducing the general wear very materially. For pile driving and dock building, they are unquestionably superior to any engine yet devised for this purpose, as one drum hoists the pile into position while the other handles the hammer, both drums being operated by one man, and under complete control. They are supplied with ratchets and pawls, as shown in the engraving, which may be thrown in and left with a load suspended with perfect safety. Foot brakes are also supplied, if desired. They also have a winch head on the end of each drum shaft, and a band fly wheel on the crank shaft, for sawing off piles or such other duty as may be required. A single acting plunger pump is furnished for feeding the boiler.

**Prices and Dimensions.**

Size Number of Engines with Boiler.	Horse Power Usually Rated.	Dimensions of Cylinders.		Size Hoisting Drums of Engines with Boilers.		Weight Hoisted Single Rope, Average Speed, Pounds.	Suitable Weight of Pile Driving Hammer for Quick Work, Pounds.	Dimensions of Boilers.			Floor Space Required Bed Plate.		Estimated Shipping Weight, with Boiler, Pounds.	Prices with Boilers and Fixtures Complete, Including Ratchets and Pawls.	Prices with Boilers and Fixtures Complete, Including Ratchets, Pawls and Foot Brakes.
		Diameter. Inches.	Stroke. Inches.	Diameter. Inches.	Length. Inches.			Diameter. Inches.	Height. Inches.	No. of 2 In. Tubes.	Width. Inches.	Length. Inches.			
67	10	7	10	12	22	2000	1800	34	78	52	45	84	6500	\$1050.00	\$1100.00
68	15	8 $\frac{1}{4}$	10	14	23	3000	2500	36	81	57	48	90	8000	1200.00	1250.00
69	20	8 $\frac{1}{2}$	12	16	26	5000	4000	40	81	80	54	102	10000	1500.00	1550.00
70	25	10	12	16	26	6500	5000	42	90	88	54	102	11500	1600.00	1650.00

**DOUBLE CYLINDER DOUBLE FRICTION DRUM HOISTING ENGINES.**  
WITH BOILERS AND FIXTURES COMPLETE.

Specially adapted for floating pile drivers, also pile driving, dock and bridge building, sewer construction, quarries, railroads, etc. This engine combines all the advantages of the single cylinder engine described above (Fig. 2416), but has the special one, due to having double cylinders, thus enabling it to start from any position, as it has no centers; this being of great importance where heavy weights are to be hoisted and handled accurately, as in quarries. Winch heads are supplied on the end of each drum shaft. The boiler is fed by an injector.

**Prices and Dimensions.**

Size Number of Engines with Boiler.	Horse Power Usually Rated.	Dimensions of Cylinders.		Dimensions of Hoisting Drums.		Weight Hoisted Single Rope, Average Speed, Pounds.	Suitable Weight of Pile Driving Hammer for Quick Work, Pounds.	Dimensions of Boilers.			Floor Space Required Bed Plate.		Estimated Shipping Weight, with Boiler, Pounds.	Prices with Boilers and Fixtures Complete, Including Ratchets and Pawls.	Prices with Boilers and Fixtures Complete, Including Ratchets, Pawls and Foot Brakes.
		Diameter. Inches.	Stroke. Inches.	Diameter. Inches.	Length. Inches.			Diameter. Inches.	Height. Inches.	No. of 2 In. Tubes.	Width. Inches.	Length. Inches.			
70 $\frac{1}{4}$	12	6 $\frac{1}{4}$	8	14	22	3000	2000	36	75	57	50	86	7000	\$1250.00	\$1300.00
71	20	7	10	14	26	5000	3500	40	81	80	54	90	9000	1400.00	1450.00
72	30	8 $\frac{1}{4}$	10	14	27	8000	5000	42	90	88	57	96	11000	1550.00	1600.00
73	40	8 $\frac{1}{2}$	12	16	31	10000	8000	48	96	115	72	120	18000	2400.00	2500.00
74	50	10	12	16	31	12000	10000	50	102	124	72	120	19000	2550.00	2650.00

Every Engine Tested and Guaranteed.

**SINGLE CYLINDER DOUBLE FRICTION DRUM HOISTING ENGINE.**  
**WITH RATCHETS AND PAWLS, WITHOUT BOILER.**

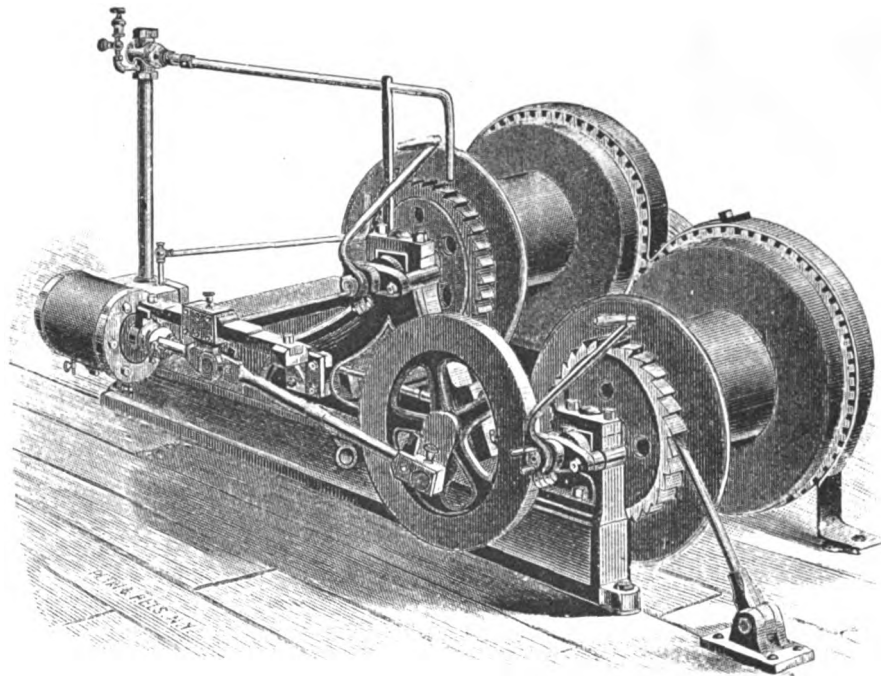


Fig. 2417.

Specially adapted for railroads, bridge builders, scows, lighters, pile drivers, quarries, etc.

The above cut represents my Improved Single Cylinder, Double Friction Drum Hoisting Engine, with Ratchets and Pawls. This style of engine is similar to those described on page 284, except that, having no boiler, it is lighter and more compact, and is intended for use in places where steam is already supplied, or where an independent boiler is used. The drums are perfectly independent in action, and a load can be hoisted on one drum, the ratchet thrown in and the load left suspended while the engine is run, and the other drum used for a separate hoist, etc. There is a hand fly wheel on the outer end of crank shaft for transmitting power by belt for pumping, sawing off piles, and any other use desired. There is a winch head on the end of each drum shaft.

**Prices and Dimensions.**

Size Number of Engines.	Horse Power Usually Rated.	Dimensions of Cylinders.		Size Hoisting Drums.		Weight Hoisted Single Rope, Average Speed. Pounds.	Suitable Weight of Pile Driving Hammer, for Quick Work. Pounds.	Estimated Shipping Weight. Pounds.	Prices of Engines Complete, with Ratchets and Pawls, Without Boilers.	Prices of Engines Complete, with Ratchets and Pawls, and Foot Brakes.
		Diameter. Inches.	Stroke. Inches.	Diameter. Inches.	Length. Inches.					
67 $\frac{1}{2}$	10	7	10	12	17	2000	1700	4000	\$675.00	\$750.00
68 $\frac{1}{2}$	15	8 $\frac{1}{4}$	10	14	20	3000	2500	5000	750.00	800.00
69 $\frac{1}{2}$	20	8 $\frac{1}{2}$	12	16	22	5000	4000	6500	1000.00	1050.00
70 $\frac{1}{2}$	25	10	12	16	22	6500	4500	7500	1100.00	1150.00

**DOUBLE CYLINDER DOUBLE FRICTION DRUM HOISTING ENGINES.**

**WITH RATCHETS AND PAWLS, WITHOUT BOILERS.**

Double Cylinder Engines of this style are also built as per table below, and possess in common with all double cylinder engines previously described, the advantage of having no centers. They are similar to the engines described above, having ratchets and pawls, and winch heads on drum shafts, but have no band fly wheel. This, however, can be supplied to order at a small additional cost. Foot brakes are also furnished, if desired.

**Prices and Dimensions.**

Size Number of Engines Without Boiler.	Horse Power Usually Rated.	Dimensions of Cylinders.		Size Hoisting Drums.		Weight Hoisted Single Rope, Average Speed. Pounds.	Suitable Weight of Pile Driving Hammer, for Quick Work. Pounds.	Estimated Shipping Weight Without Boiler. Pounds.	Prices of Engines Complete, with Ratchets and Pawls, Without Boiler.	Prices of Engines Complete, with Ratchets and Pawls, and Foot Brakes.
		Diameter. Inches.	Stroke. Inches.	Diameter. Inches.	Length. Inches.					
70 $\frac{3}{4}$	12	6 $\frac{1}{4}$	8	14	16	2500	2000	4000	\$725.00	\$775.00
71 $\frac{1}{2}$	20	7	10	14	19	5000	3500	5500	825.00	875.00
72 $\frac{1}{2}$	30	8 $\frac{1}{4}$	10	16	24	8000	6000	6000	950.00	1000.00
73 $\frac{1}{2}$	40	8 $\frac{1}{2}$	12	20	30	10000	8000	10000	1550.00	1625.00
74 $\frac{1}{2}$	50	10	12	20	30	12000	10000	11000	1650.00	1725.00

Every Engine Tested and Guaranteed.

THORNTON N. MOTLEY, NEW YORK.

DOUBLE CYLINDER REVERSIBLE LINK MOTION HOISTING  
WITH DOUBLE SPUR GEARING AND AUTOMATIC SAFETY BRAKES.

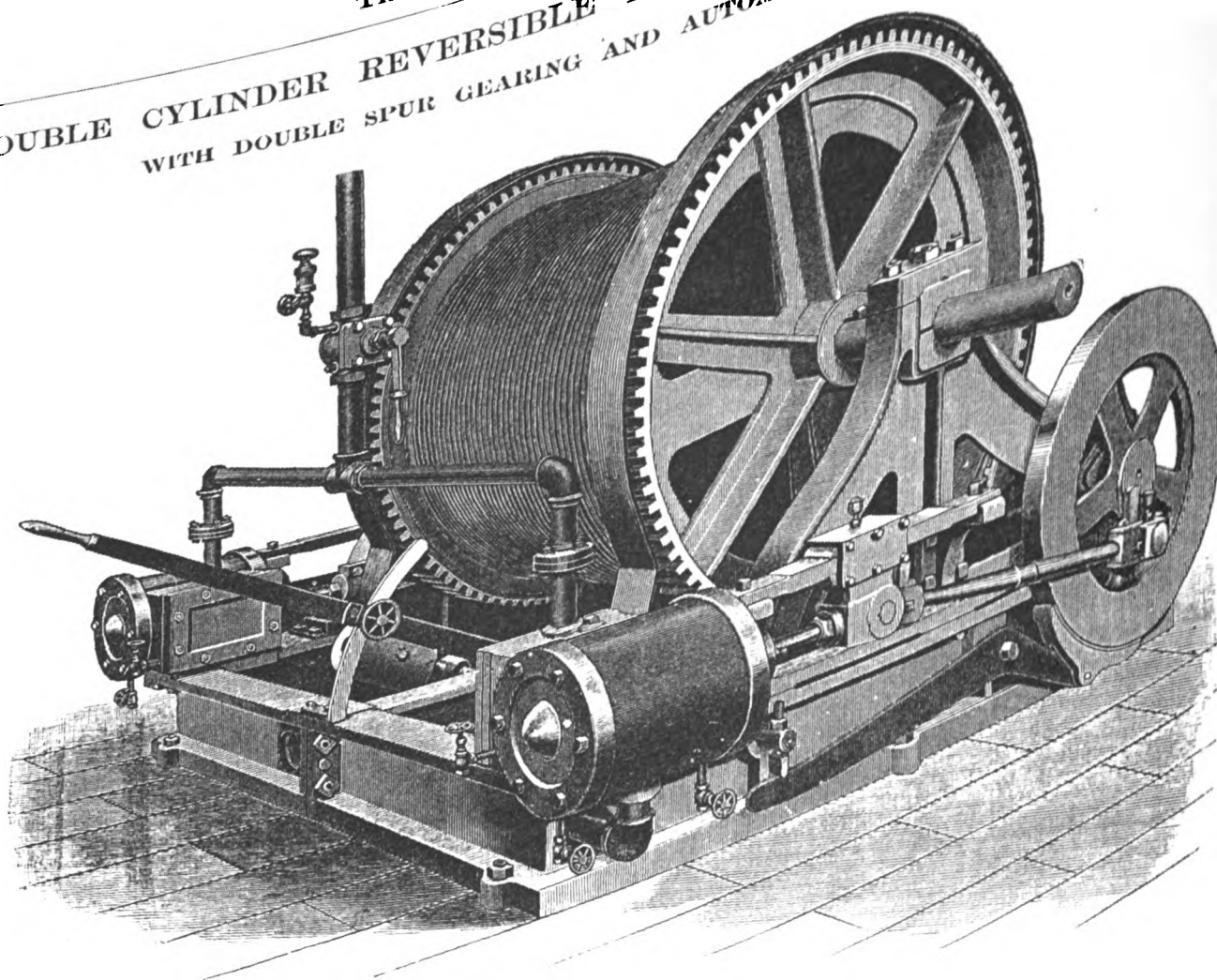


Fig. 2418.

Specially adapted for mines, inclines, etc.

The above cut represents my Improved Double Cylinder Reversible Link Motion Hoisting Engine, with double spur gearing. This is a decided advantage in all kinds of hoisting, either where the duty is heavy or where safety is particularly desirable, and also does away with the band brake, which, in case of accident, the engineer, losing presence of mind, is frequently unable to apply. The gearing being double, and either set capable of carrying the entire load of the engine with safety, the danger from accident is almost impossible, and the strains being equally divided, the engines are more durable. As an additional protection, the engine is supplied with an automatic safety brake, which is applied by the reversing lever automatically whenever the links are moved to a central position. The brakes, being applied to each crank wheel, have the advantage of the gearing between the load held. Every engine is thoroughly tested with steam before leaving the works.

#### Prices and Dimensions.

Size, Number of Engine.	Horse Power Usually Rated.	Dimensions of Cylinders.		Size of Hoisting Drum.		Size of Wire Rope for which Drums are Grooved. Diameter. Inches.	Number of Feet Wire Rope Drum Holds. Single Coil.	Average Weight Engines Hoist. Pounds.	Average Hoisting Speed per Minute. Feet.	Size of Base or Engine Bed Plate.		Estimated Shipping Weight of Engines only. Pounds.	Prices of Engines Complete.
		Diameter. Inches.	Length. Inches.	Diameter. Inches.	Length. Inches.					Width. Inches.	Length. Inches.		
55½	30	8¼	10	41	34	7/8	350	3500	350	72	76	6500	\$1150.00
56½	40	8½	12	48	38	1	450	4500	375	68	89	12000	1600.00
57½	50	10	12	54	38	1	500	5000	400	86	91	12500	1700.00
58½	75	12	15	60	48	1	700	6500	450	102	113	22500	2800.00
59½	100	14	18	66	54	1	875	7500	450	125	117	26500	3200.00

Engines with different size drums and cylinders from above made to order.

Every Engine tested and guaranteed.



## DOUBLE CYLINDER REVERSIBLE LINK MOTION HOISTING ENGINE. WITH FIXED DRUMS AND DOUBLE BAND BRAKES.

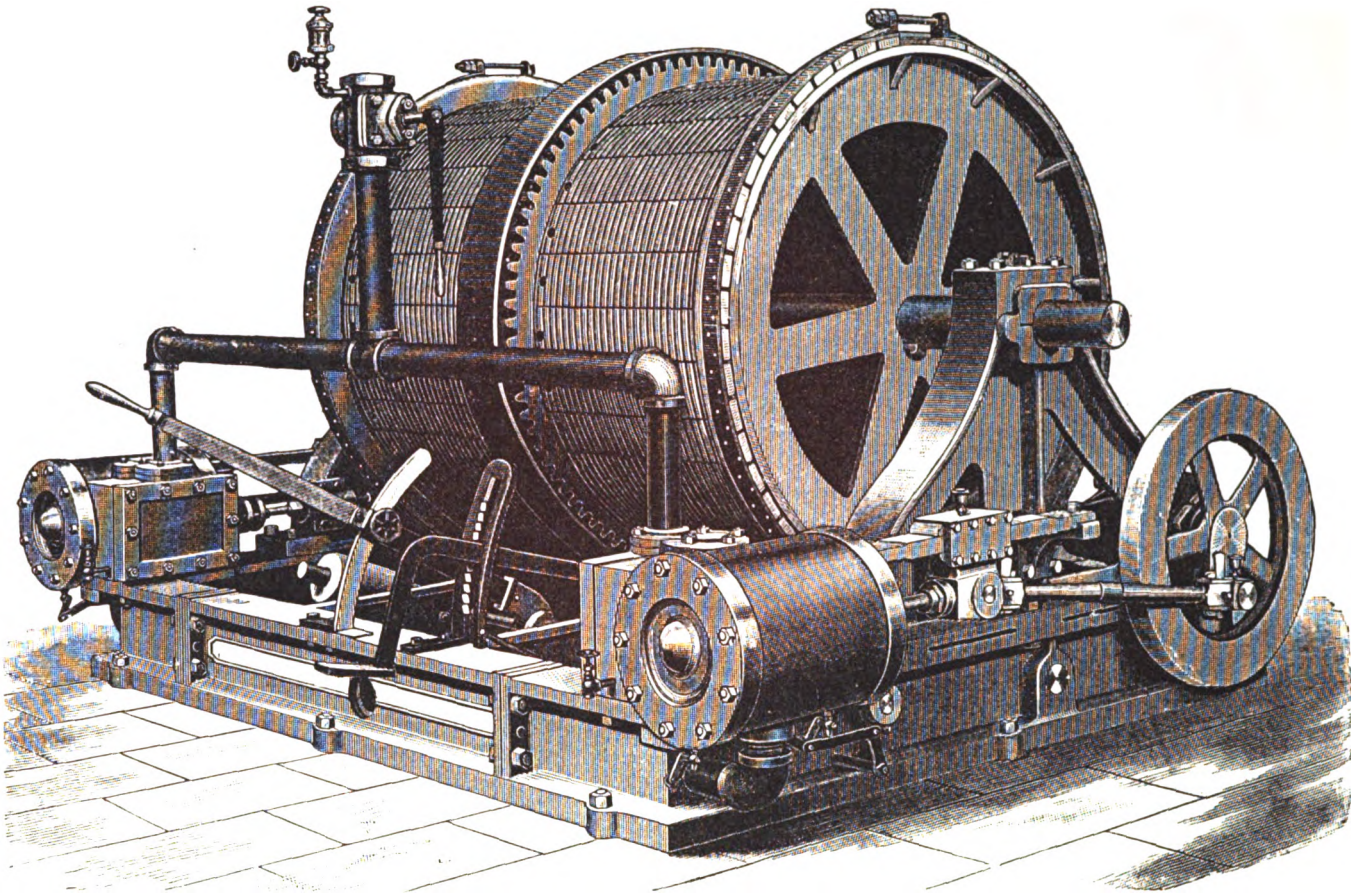


Fig. 2419.

Specially adapted for double compartment shafts and double track inclines where it is desired to work the hoists automatically, the loaded cars or cage ascending while the empty cars or cage are descending.

The special features about this style of engine are its compactness, solidity and efficiency, and comparatively low price, while combining all the latest improvements in the details of construction. The drums are made on substantial cast iron center flanges, strongly keyed to the shaft, the hard wood lags being securely bolted to same, and turned off true and spirally grooved for wire rope. The drum shaft, on which both drums are mounted, is of large diameter, and made of hammered steel. Two strap brakes are supplied, one on each end of the drums, which are lined with hard wood blocks, and arranged so that they are both applied simultaneously by means of a foot lever. They have a simple device for adjusting, taking up the wear, etc. The engines are easily transported and erected, and being completely self-contained and mounted on a substantial bed plate, will not get out of line, even when mounted on an ordinary timber foundation.

Every Engine is thoroughly tested by steam at the works before being shipped.

### Prices and Description.

Size Number of Engine.	Horse Power. Usually Rated.	Size of Cylinders.		Size of Hoisting Drums, Each Drum.		Size of Wire Rope for which Drums are Grooved. Diameter. Inches.	Number of Feet Wire Rope Drum Holds Single Coil.	Average Hoisting Capacity. Pounds.	Average Hoisting Speed per Minute. Feet.	Proportion of Gearing.	Size of Bed Plates.		Estimated Shipping Weight. Pounds.	Prices of Engines Com- plete.
		Diameter. Inches.	Stroke. Inches.	Diameter. Inches.	Length. Inches.						Width. Inches.	Length. Inches.		
106 $\frac{1}{4}$	30	8 $\frac{1}{4}$	10	42	30	$\frac{7}{8}$	350	3500	350	5 to 1	89	76	9000	\$1650.00
107 $\frac{1}{4}$	50	10	12	55	36	1	475	4500	400	5 $\frac{3}{4}$ to 1	116	89	15000	2100.00
108 $\frac{1}{4}$	75	12 $\frac{1}{4}$	15	63	42	1	650	6500	400	6 to 1	126	113	27500	3150.00
109 $\frac{1}{4}$	100	14	18	72	48	1 $\frac{1}{8}$	750	7500	450	6 to 1	144	117	35000	4200.00

### SPECIAL MINING AND INCLINE HOISTS.

In addition to the various styles of hoisting engines for mines, etc., described on the preceding pages, I make a large variety of engines for special purposes and to meet special conditions. These are made of all powers from 10 to 300 horse, with all sizes of drums up to 10 feet in diameter.

Prices quoted on application.

Every Engine tested and guaranteed.

## IMPROVED L STATIONARY ENGINE.

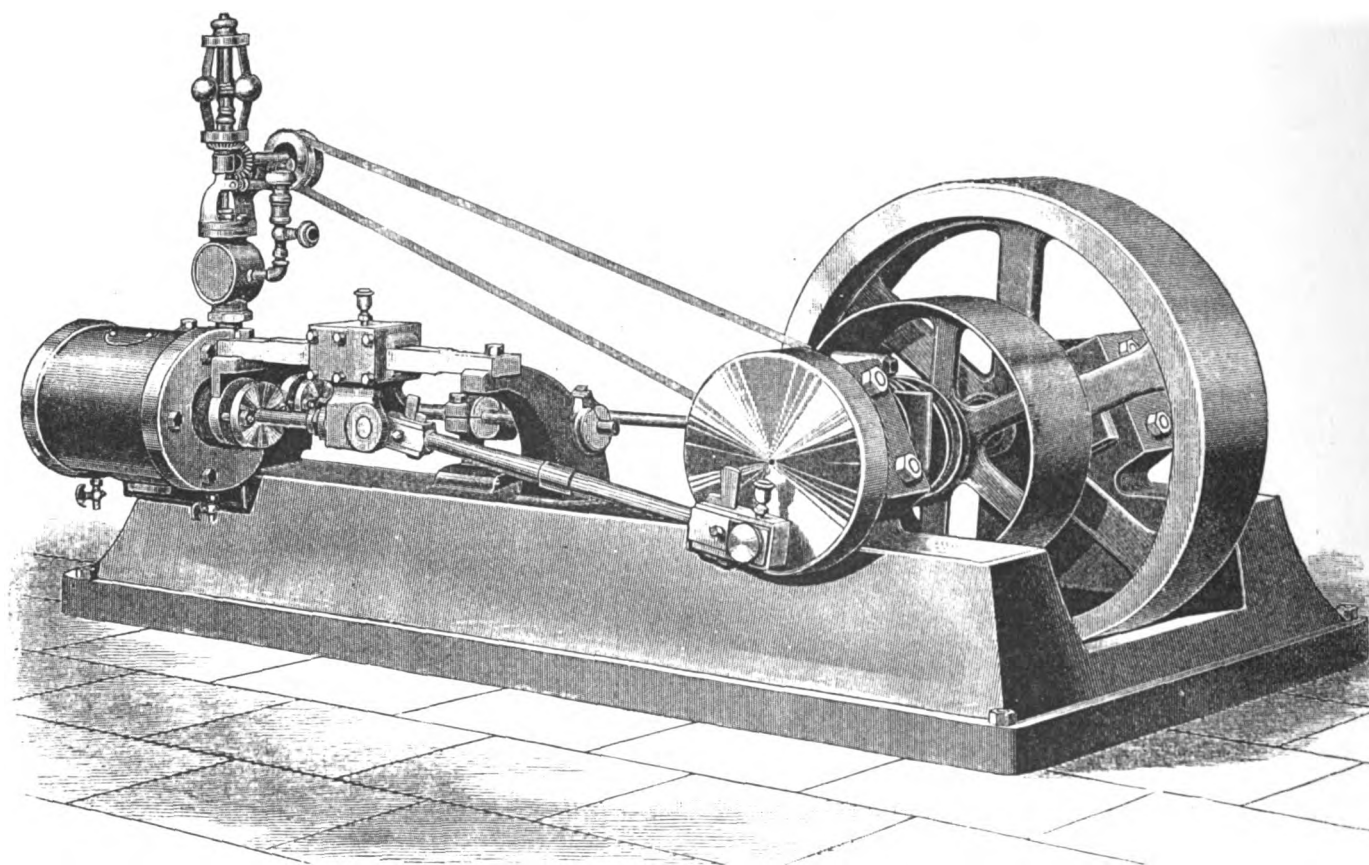


Fig. 2420.

The above cut represents my new and improved L Stationary Engine, which was designed specially to meet the demand for a simple and effective, yet thoroughly first-class, moderately high speed slide valve engine. As will be seen from an examination of the engraving—which was made from a photograph—the engine is perfectly self-contained, and is mounted upon a strong and substantial bed plate of L shape, which is cast in one piece, and faced off to receive the cylinder, slide bracket and pedestals, thus ensuring a solid machine which cannot get out of line, even when erected on an ordinary timber foundation or bolted to a floor. The running parts are of the improved locomotive type, with hanging crosshead, etc., and the wearing surfaces are extra large. The connecting rod is extra long, being seven times the length of the crank; and the reciprocating parts being balanced as far as possible by a counter weight on the crank wheel, opposite the crank pin, the engine runs easily, rapidly and steadily, with the minimum of friction. The engine is not designed as a so-called cheap engine, but is made in the best possible manner, and of the best quality of steel and iron; and every part being made absolutely to gauge, on the interchangeable part system. I guarantee the engine to be superior in mechanical construction and perfect workmanship to any slide valve engine yet made.

## FOR ELECTRIC LIGHTING

It is particularly well adapted, as it is capable of a high rotative speed without undue heating of journals, crank pin, etc., and being perfectly balanced and fitted with a sensitive and accurate governor, will give the very best results and remarkable economy for a slide valve engine. In fact, I claim that for small isolated plants where the work is constant, such as running on arc light dynamos, etc., it will give equally as economical results as any automatic cut-off engine of equal size, with vastly less trouble and annoyance and less wear and tear on the engine, and will not require as skilled and expensive attendance. The engine governor has an adjustable speeder, with which the speed can be regulated to any number of revolutions desired, and maintained constant. Every engine is thoroughly tested at the works before being shipped.

## Prices and Description.

Horse Power.	Size of Cylinders.		Steam Pressure. Pounds.	Size of Steam and Exhaust Pipes.		Number Revolutions per Minute.	Size of Pulleys.				Size of Bed at Base.		Shipping Weight. Pounds.	Prices Complete, as per Cut.
	Diameter. Inches.	Stroke. Inches.		Steam.	Exhaust		Small.		Large.		Length. Inches.	Width Pulley End. Inches.		
5	5	6	60	1	1½	300	12	5	22	5	59	37	1000	\$210.00
8	6½	8	60	1½	1½	225	16	6½	29	6½	71	42	1650	275 00
15	8½	10	60	2	2½	180	24	8½	36	8½	92	51	3000	425.00



## STATIONARY ENGINE, CLASS B.

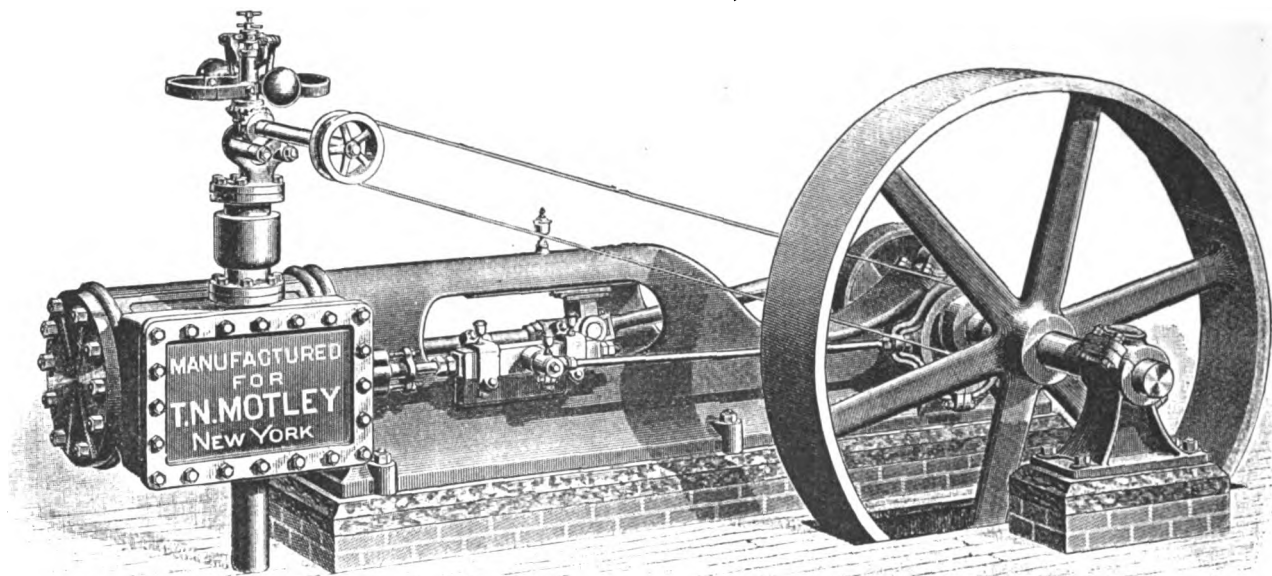


Fig. 2421.

These Engines are built of entirely new and improved patterns, are remarkably compact, strong, simple in construction and of the best materials and workmanship. The ports are set close to the ends of the cylinder, are of large dimensions, and extending to the bottom of the cylinder, insure perfect drainage independent of cylinder cocks. The clearance has been reduced to a minimum, making these the most economical engines in the market.

The outside of the cylinders are covered with a handsome cast iron lagging.

The valve motion is especially designed for a high rate of speed. All the running parts are carefully balanced. These engines have been tested practically, running at a speed of 800 revolutions per minute, and can therefore be guaranteed to run without injury at a much higher rate of speed than is given in the table.

The patent adjustable cut-off is a new and important feature. It is the only adjustable cut-off using but one eccentric and one valve that can be quickly and accurately adjusted. It can be set to any point of cut-off in an instant, and is much simpler and more economical than any of the devices known heretofore.

The form of construction is such as to insure perfect alignment.

The guides are made in the strongest possible form, and being cast with the bed form a strong cylindrical brace which stiffens and strengthens the bed.

It makes no difference whether these engines are run over or under stroke.

The cross head is fitted with adjustable gibs, top and bottom, and has very large wearing surfaces. This cross head is a great improvement on the old style of locomotive cross head, as it is stronger, has greater wearing surface, and will accommodate itself to any slight variation in the alignment of the engine occasioned by the shaft settling or by any other cause.

The cross head wrist pin, crank wrist pin, piston and valve rods are made of steel.

The connection rod is made of hammered steel with solid ends slotted out to receive the brasses, doing away with straps, gibs and keys. The brasses are adjustable by means of wedges and set screws. This is the strongest form of rod made.

The shafts are made of hammered iron.

The pump is fastened to the cylinder, is driven by the cross head, and may be disconnected or taken off entirely in one minute. The seats and valves are brass.

The heater is fastened to the bottom of the cylinder and extends back along the side of the bed, being supported by brackets, but is entirely independent of the bed. The heat from it can in no way affect the working parts of the engine. In most cases it is preferable to use an independent pump and heater or an injector, but this is optional with the purchaser.

All parts are made to special steel templates and gauges, thus insuring exactness and perfect uniformity.

The price of engine does not include any steam, exhaust or water pipes, foundation bolts or governor belt. All brass fittings are furnished with each engine, also two wrenches. In ordering specify in detail just what you want.

These engines are made either right or left hand. The cut is right hand. I furnish either band fly wheel, as shown in cut, or fly wheel and small pulley as per table.

Dimensions of Stationary Engines, Class B.

Size, numbers.....	1	2	3	4	5	6	7	8	9
Horse power.....	20	25	30	40	35	45	60	80	100
Diameter of cylinder.....inches,	8 $\frac{1}{2}$	9 $\frac{1}{2}$	10 $\frac{1}{2}$	12	10 $\frac{1}{2}$	12	14	16	18
Length of stroke....."	12	12	12	12	16	16	16	20	20
Number of revolutions.....per minute,	200	200	200	200	150	150	150	120	120
Diameter of steam pipe.....inches,	2	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$
Diameter of exhaust pipe....."	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	4	4	4	5	5
Diameter of band fly wheel....."	54	54	60	60	72	84	84	96	96
Diameter of fly wheel....."	60	60	72	72	84	96	96	108	108
Diameter of pulley....."	32	32	36	36	44	48	48	54	54
Width of belt....."	9	10	11	12	12	14	15	18	20
Weight of balance.....pounds,	650	700	850	990	1300	1600	1700	2400	2600
Diameter of shaft.....inches,	3 $\frac{3}{4}$	3 $\frac{3}{4}$	4 $\frac{1}{4}$	4 $\frac{1}{4}$	4 $\frac{7}{8}$	4 $\frac{7}{8}$	4 $\frac{7}{8}$	5 $\frac{7}{8}$	5 $\frac{7}{8}$
Length of shaft....."	60	60	60	60	66	66	66	72	72
Shipping weight of engine complete.....pounds,	3300	3500	3800	4000	5600	6000	6200	9600	10000

Special prices on application.

## DANDY UPRIGHT ENGINE AND BOILER.

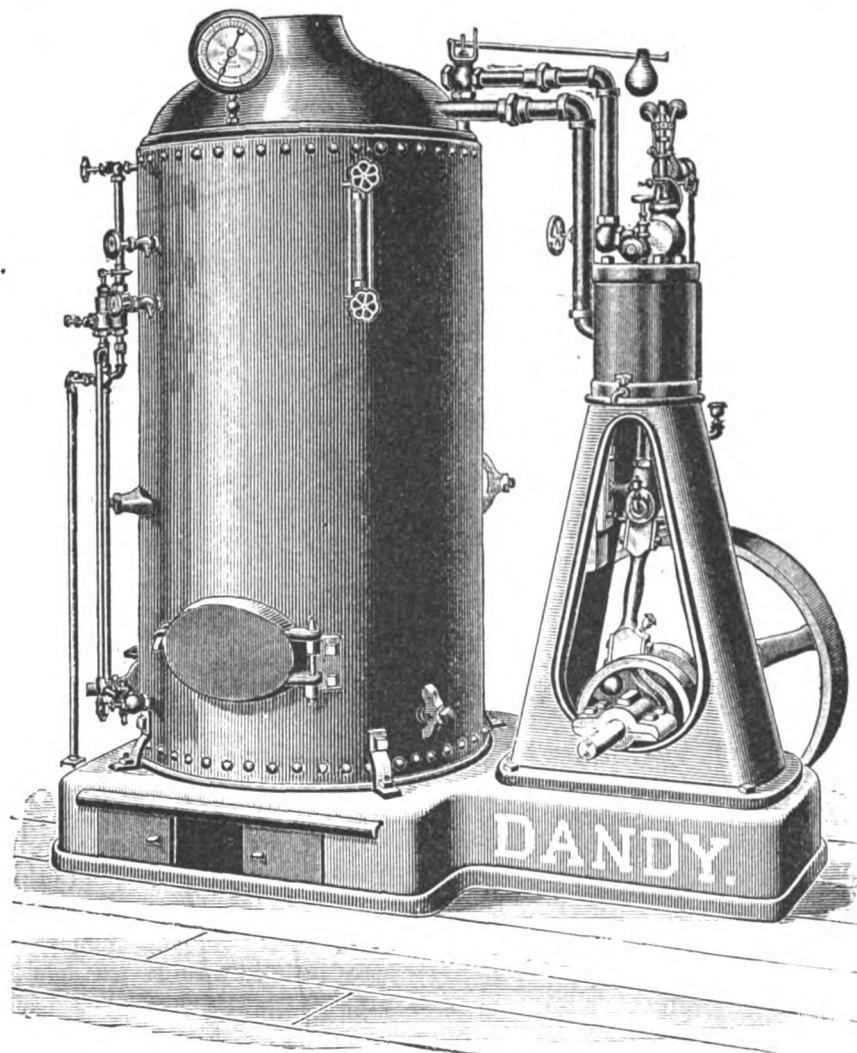


Fig. 2422.

For Electric Plants, Printing Presses, Fans, Blowers, Pumps, Steam Drills, Yachts, etc.

This combination of Upright Engine and Boiler will give the best working results, with lowest first cost consistent with perfect execution, economy of space and fuel, lightness in running, and speed of motion. It is very simple in construction as well as symmetrical and compact in form.

## Description of Boiler.

All of these boilers, unless otherwise ordered, are of Park Bros. Co., or Pine Iron Works Steel, having a tensile strength of 60000 pounds, and are all submitted to hydrostatic and hydraulic tests, besides the steam test of 150 pounds, before leaving the shops. The tubes of standard quality and make are carefully inspected before being used. The tube-heads are flanged on formers specially made for the purpose, and the tube-heads are drilled to exact size and the tubes carefully fitted, being generally driven in with a maul and then expanded. Tubes fitted in this manner will stay tight and give no trouble, whereas tubes fitted in loosely and then expanded are a constant source of trouble and expense from leaking.

## Description of Engine.

The engine is upright and made from the very best of materials by only skilled mechanics; it is a finished piece of mechanism in every respect. The balanced cranks insure the engine standing steady without jumping.

## Dimensions of Boilers.

Size Nos.	Horse Power.	Size of Boiler. Diam.	Height.	Height of Smoke Hood.	Number of Tubes.	Diameter of Tubes.	Length of Tubes.	Thickness of Shell.	Thickness of Tube-Heads.	Size of Fire Box. Diam.	Height.	Weight of Boiler.	Height of Base.	Total Height.
1	4	22 ins.	40 ins.	7½ ins.	60	1½ ins.	24 ins.	⅜ in.	¼ in.	19 ins.	16 ins.	500 lbs.	7½ ins.	55 ins.
2	7	30 "	55 "	10½ "	60	2 "	34 "	½ "	⅝ "	26 "	20 "	1000 "	8 "	73½ "
3	9	30 "	62 "	10½ "	72	2 "	40 "	½ "	⅝ "	26 "	20 "	1200 "	8 "	80 "

## Dimensions of Engines.

Size Nos.	Horse Power.	Size of Cylinder. Diam.	Stroke.	Steam Pressure.	Sizes of Pipes. Steam.	Exhaust.	Revolutions per Minute.	Size of Fly Wheels. Diam.	Width of Face.	Length.	Size of Base. Width.	Height.	Weight of Engine.
1	4	3½ ins.	5 ins.	60 lbs.	¾ in.	1 in.	300	22 ins.	5 ins.	50 ins.	27 ins.	7½ ins.	344 lbs.
2	6	5 "	6 "	60 "	1 "	1½ "	275	25 "	6 "	62 "	36 "	8 "	585 "
3	8	6 "	6 "	60 "	1½ "	1½ "	275	26 "	6 "	62 "	36 "	8 "	585 "

## Dimensions of Light Upright Engine.

Horse Power.	Diameter of Cylinder.	Length of Stroke.	Height above Base.	Diameter of Fly Wheel.	Face of Fly Wheel.	Weight.
1½	2½ inches	3 inches	30 inches	13 inches	3 inches	200 lbs.

These engines and boilers are especially adapted for steam yachts, and when wanted for that purpose, I furnish coupling (to couple on to the shaft), and reverse in place of fly wheel and governor. The engines are sold separately on an independent base when so wanted.

**Engines and Boilers on one Base.**  
Prices on application.

**Boilers only on Base.**  
Prices on application.

**Engines only on Base.**  
Prices on application.

## AGRICULTURAL ENGINE AND BOILER.

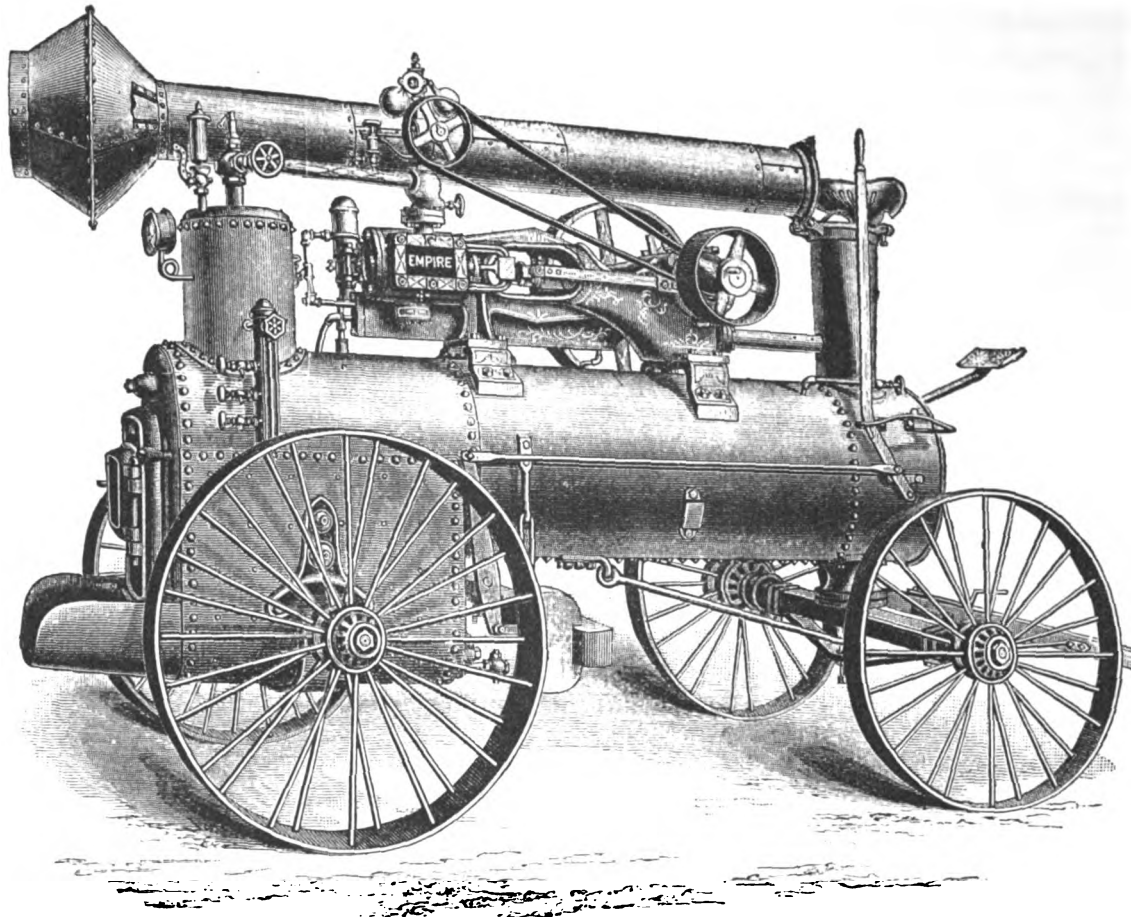


Fig. 2423.

The wheels and axles are of wrought iron, the former being designed with a special view to lightness and strength. The hind axle extends under the first box, being curved to the exact form of the boiler, instead of merely abutting against the side of the same—as is customary with most other manufacturers—thus relieving the boiler from any sudden jar and consequent liability to injury when traveling on rough country roads.

An improvement to the spark arrester is made by placing the screen on a center with lever attached, extending down the side of the pipe, by which the top can be opened and closed at pleasure, and by a quick movement of the same, any accumulation of sparks in the screen can be removed.

This outfit is furnished complete with heater, force pump, governor, throttle valve, all necessary oil cups, smoke stack (short, about length of boiler only) spark arrester, steam gauge, water gauge fitted with stand pipe, three gauge cocks, whistle, patent pop safety valve and suction hose, ready in fact for fire and water, as shown in cut. Previous to shipment it is all carefully tested, the engine being run for several hours under a heavy load, and is perfect in every way.

## Dimensions.

ENGINE.								BOILER.								Weight Complete Pounds.
Size Nos.	Horse Power.	Revolutions Per Minute.	Cylinder.		Sizes, Band Wheels.			Shell Diameter.	Measurements, Furnace.			Number of Tubes.	Sizes, Tubes.		Smoke Stack.	
			Diameter. Inches.	Stroke. Inches.	Diameter. Inches.	Diameter. Inches.	Width. Face. Inches.	Inches.	Length. Inches.	Width. Inches.	Height. Inches.		Diameter. Inches.	Length. Inches.	Diameter. Inches.	
1	6	300	5	6	24	12	5	24	34	18	26	22	21 $\frac{1}{4}$	61	10 $\frac{1}{2}$	
2	8	256	6	7	28	14	6	27	36	22	32	20	3	75	12	
3	10	220	7	8	36	18	7	29	36	24	34	22	3	76	12	
5	15	200	8	9	40	20	8	32	38	26	38	27	3	80	14	
6	20	200	9	9	40	20	9	33	52	27	37	30	3	88	16	
	25	180	10	10	44	22	10	35	52	29	38	34	3	94	16	
10	40	150	12	12	54	27	12	39	52	33	49	45	3	124	18	

## PORTABLE ENGINES AND BOILERS ON SKIDS.

Portable Engines and Boilers can be furnished, mounted on skids, which will correspond in all other respects to the agricultural, as described above.

## PORTABLE BOILERS ON WHEELS.

Portable Boilers only, mounted on wheels as per cut Fig. 2423, as per specifications above, can be furnished.  
Prices quoted on application.

## OIL AND GAS ENGINES.

## BOSTON MODEL KEROSENE OIL ENGINE.

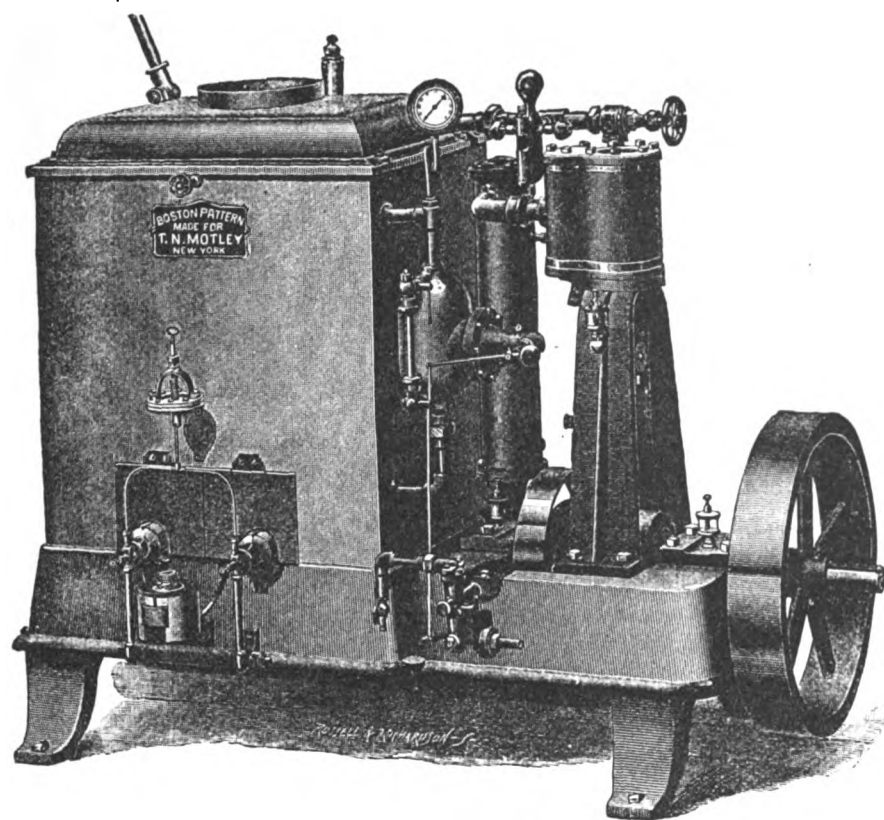


Fig. 2424.

The Boston Model Engines and Boilers are automatic in their fuel and water supply. They are fitted with the same appliances for safety and adjustment for wear; they are made of the same quality of material and with the same skilled and high cost labor as are the largest and most costly engines and boilers. The stationary engine has an automatic cut-off governor which controls the speed of the engine when running with or without a load.

The marine or boat engine is fitted with a reverse motion.

A governor and a reverse motion cannot be attached to the same engine at the same time. The average quantity of oil used per hour, per horse power, is about two quarts.

The fuel is kerosene oil or petroleum, quality 110 or 115 test.

There is not as much danger in using kerosene oil as fuel for the fire as there is in the safest lamp system in the world.

## Prices and Dimensions.

Horse Power.	Size of Cylinder.	Size of Base.	Height over all.	Weight Complete.	Sizes of Pulleys. Diam.	Face.	Rev. per Minute.	Diam. Shaft.	Price, Each.
1	2 1/8 x 3 ins.	22 x 35 ins.	30 ins.	500 lbs.	10 ins.	2 1/2 ins.	450	1 1/8 ins.	\$175.00
2	3 x 4 "	20 x 45 "	34 "	800 "	18 "	3 "	400	1 1/2 "	275.00
4	3 1/2 x 4 "	20 x 48 "	35 "	900 "	18 "	3 "	400	1 1/2 "	375.00
6	4 1/2 x 5 "	21 x 59 "	42 "	1400 "	24 "	5 "	325	2 "	575.00

I also make a 1 horse power engine same as the 1 horse power described above, but with cast iron boiler.

Price each.....\$155.00  
Stationary and Marine Engines are the same price.

The whistle for Marine Engine is extra, costing \$3.00 to \$10.00, according to size and finish.

## Prices, Shafts and Bearings for Propellers.

For Marine Engine.	Iron and steel Fittings.	Composition Fittings.
1 horse power.....	per set, \$20.00	\$30.00
2 ".....	" 25.00	35.00
4 ".....	" 30.00	40.00
6 ".....	" 35.00	45.00

## GAS ENGINE.

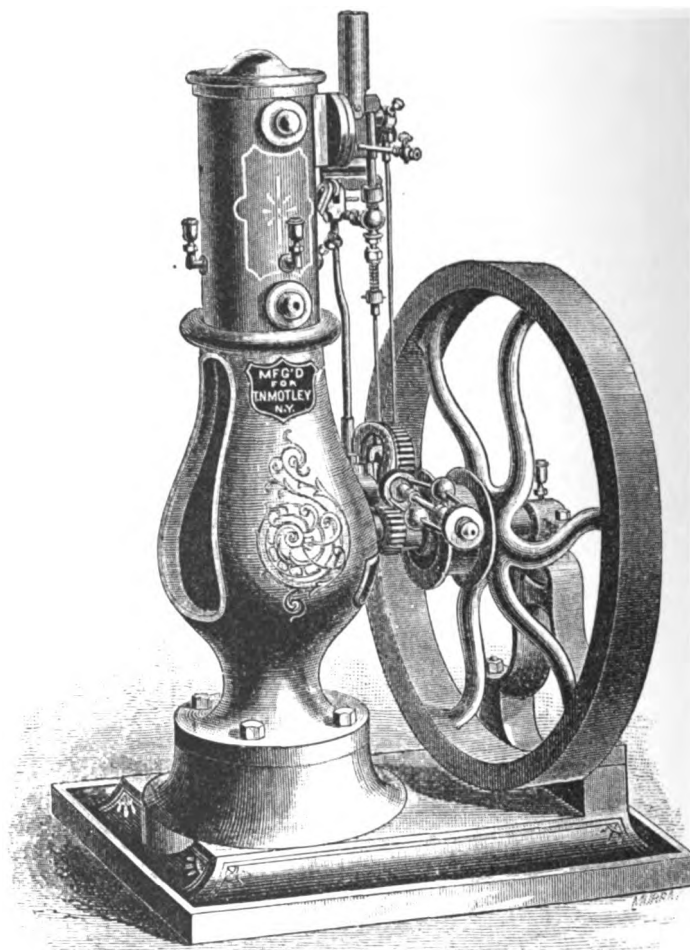


Fig. 2425.

This Gas Engine is superior to any thing of the kind now built while for elegance of design, reliability, compactness and simplicity it is unsurpassed. It has fewer working parts, is positive in its action, has no springs to be carefully adjusted, has less friction, requires less attention and cleaning, and is offered at a lower price than any engine in the market.

It can be easily started by applying a match, and will develop full power at once. It consumes from 25 to 30 cubic feet of gas per hour per horse power.

## Dimensions.

Horse Power.	Size of Cylinder.	Size of Base.	Height over all.	Weight Complete.	Sizes of Pulleys. Diam.	Face.
1	4 1/2 x 8 ins.	24 x 34 ins.	58 ins.	1100 lbs.	8 ins.	4 ins.
2	6 1/2 x 10 "	30 x 48 "	70 "	1800 "	10 "	5 "
4	8 x 12 "	30 x 56 "	80 "	2400 "	12 "	6 "
6	9 1/2 x 14 "	36 x 60 "	84 "		16 "	8 "

## Prices and Speed.

1 horse power	180 revolutions per minute	each, \$250.00
2 " "	160 " "	" 375.00
4 " "	160 " "	" 500.00
6 " "	160 " "	" 675.00

## STEAM LAUNCHES.

These Launches are fitted with the Boston Model Kerosene Oil Engine. They are designed and built to secure the greatest speed with safety. They will run from 6 to 12 miles per hour.

## Dimensions.

No. 1, with 1 H. P. engine,	22 feet long,	4 1/2 feet wide,	2 feet deep.
" 2, " 2 "	25 "	5 1/2 "	2 1/3 "
" 4, " 4 "	28 "	5 1/2 "	2 1/2 "
" 6, " 6 "	32 "	6 "	2 1/2 "

Separate catalogues and prices furnished on application.

# GAS AND HOT AIR PUMPING ENGINES.

## GAS PUMPING ENGINE.

## Description, Gas Pumping Engine.

Fig. 2426.

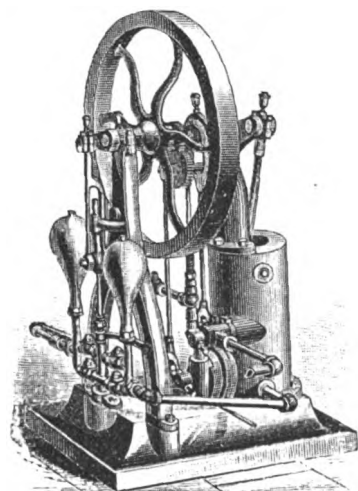


Fig. 2426.

This Engine has been especially designed to supply a want for a thoroughly reliable, practical and economical method of raising water for flats, hotels, hydraulic elevators, private residences and extinguishing fires.

In this Engine the gas is exploded in the cylinder. It will pump more than double the quantity of water for gas consumed than any hot air engine. It is made entirely of metal, has no packing to burn or blow out, can be started instantly by simply applying a match, and will pump between 200 and 300 gallons of water before other engines are ready to work.

## Prices and Dimensions.

Size Nos.	Size of Cylinders. Diam.	Stroke.	Capacity per Hour.	Cubic Feet Gas per Hour.	Size of Base.	Height over all.	Weight Complete.	Price, Each.
1	4½ ins.	8 ins.	400 gals.	25	20x30 ins.	50 ins.	700 lbs.	\$250.00
2	5 "	8 "	1000 "	35	26x32 "	55 "	1000 "	350.00

## ERICSSON'S NEW HOT AIR PUMPING ENGINE.

## IMPROVED RIDER COMPRESSION HOT AIR PUMPING ENGINE.

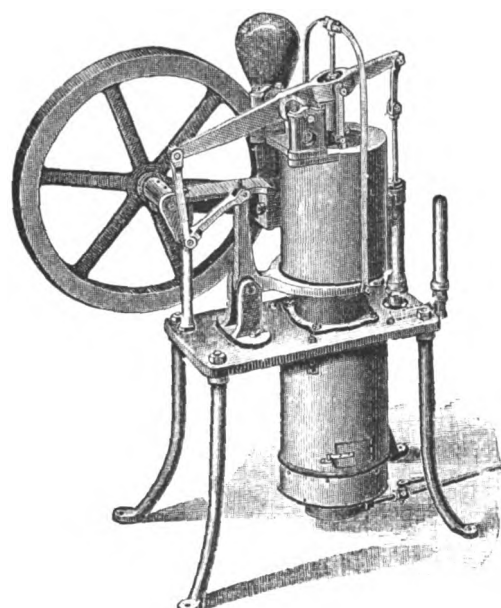


Fig. 2427.

Ericsson's Caloric Pumping Engine is specially intended for domestic use in lifting and forcing water from wells and cisterns, or from water pipes, to tanks on upper floors of buildings in city or country.

This Pumping Engine is entirely safe, no steam being employed, and is not liable to derangement. Can be operated and attended to by any one.

Will pump the number of gallons specified to a height of 50 feet, but they will pump more water to a lesser height, or less water to a greater height proportionately.

Made on the interchangeable plan to the most approved system of standard steel gauges.

They are adapted to pumping for country seats, railroad tank stations, hotels, green houses, barns, irrigation of lawns, orange groves and gardens, sprinkling streets and race tracks, farms, hydraulic elevators, fish hatching, bottling, public buildings, school houses, village water works, etc., etc.

Will pump the number of gallons specified to a height of 50 feet, but they will pump more water to a lesser height, or less water to a greater height proportionately.

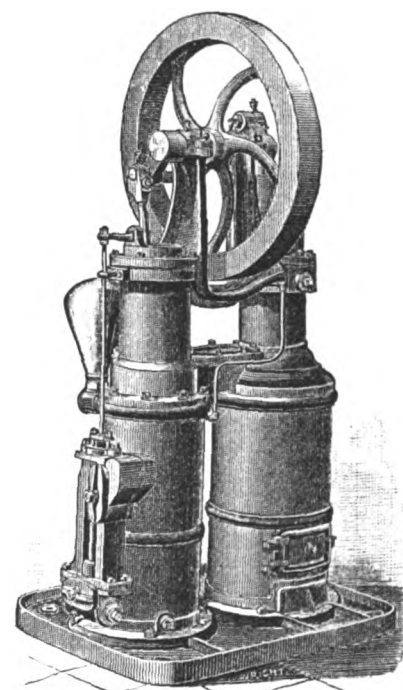


Fig. 2428.

## Prices and Dimensions.

5 inch cylinder, pumping 150 gallons per hour 50 feet. Specially intended for pumping out of "Croton" or water works pipes for single dwellings:

With gas furnace..... \$150.00

6 inch cylinder, pumping 200 gallons per hour 50 feet:

With gas furnace.....\$200.00

With coal or wood furnace..... 210.00

8 inch cylinder, pumping 350 gallons per hour 50 feet:

With gas furnace.....\$235.00

With coal or wood furnace..... 250.00

12 inch cylinder, pumping 800 gallons per hour 50 feet:

With coal or wood furnace only.....\$320.00

Duplex 12 inch cylinders, pumping 1600 gallons 50 feet:

With coal or wood furnace only.....\$450.00

The above prices include engine, pump, copper air-chamber, vacuum chamber, furnace, oil can and wrench. Everything furnished except suction and discharge pipes.

## Dimensions.

Size of Cylinders.	Size of Base.	Height over all.	Revolutions per Minute.	Weight Complete.	Size of Suction and Discharge Pipes.
5 ins.	26x34 ins.	58 ins.	100 to 160	1050 lbs.	1½ ins.
6 "	29x40 "	71 "	80 to 120	1800 "	1½ "
10 "	32x52 "	93 "	80 to 110	3600 "	2½ "

## Prices.

Size of Cylinders.	With Rolling Valve Pump Attached to Cooler or Engine.	With Deep Well or Detached Rolling Valve Pump.
5 inches.....	each, \$300.00	\$325.00
6 " .....	" 400.00	425.00
10 " .....	" 700.00	730.00

The prices named above include engine, furnace, copper air and vacuum chambers; printed directions in book form how to set and operate; wrench, shovel and poker; oil and oil can; everything complete, ready for suction and discharge pipes.



## IMPROVED UPRIGHT TUBULAR BOILER.

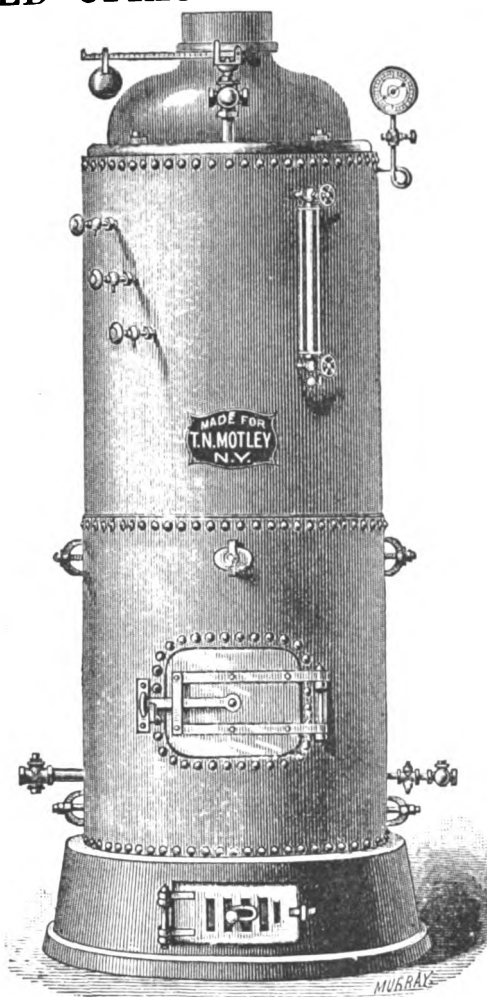


Fig. 2429.

## Description.

In designing this style of Boiler I have adopted the usual form but departed from the customary practice which prevails among boiler makers of crowding the boiler full of tubes, thereby increasing the heating surface and enabling them to be rated at a higher horse power regardless of the area of the grate surface or the size of the fire box. In order to determine the maximum efficiency of a boiler of a given size of grate surface, I have made a series of careful experiments at the works, increasing and decreasing the number of tubes and their length, and increasing the size of fire-box or combustion chamber, until I have now arrived at the dimensions stated in the following table as embodying the results which actual practice has shown to give the maximum efficiency. While this form of boiler is not the most economical in the use of fuel, yet if properly proportioned and used with natural draught, it will give good results. It is portable and easily set up and run

## Description.

The shell in this boiler is of C. H. No. 1 Iron, of 50000 lbs. tensile strength, and the tube-heads and fire-box are of the best flange iron of same strength. The door, door-frame and mountings are all of wrought iron and made in the strongest and neatest manner. The bottom end of the water leg is flanged ogee shape. The fire-box is stay-bolted to the shell with screw stay-bolts properly riveted over on the ends. The tube-heads are drilled, and particular care is taken to have the tubes a tight fit, the tubes then being expanded and caulked or beaded over on the heads. Suitable hand holes are provided, both on the line of the lower tube-heads and at the bottom of the water leg for cleaning purposes.

The fixtures are first-class and comprise the following: Base, hood or smoke box, grates, grate ring, safety valve and nipple, steam gauge and syphon water gauge, three gauge cocks, check valve and nipple, and blow off valve and nipple.

## Prices and Dimensions.

Size Nos.	Horse Power.	Diameter of Boilers. Inches.	Height of Boiler. Inches.	Number Tubes all 2 inch Diameter).	Length of Tubes. Inches.	Thickness of Iron in Shell and Furnace. Inch.	Thickness of Tube Heads. Inch.	Estimated Weight of Boiler without Fixtures. Pounds.	Estimated Weight of Boiler and Fixtures Complete. Pounds.	Price of Boilers only without Fixtures.	Price of Boiler with all Fixtures Complete per Cut. No Stack.	Price of Boiler with all Fixtures Complete including Inspirator. No Stack.
1	5½	28	63	40	40	¼	½	1100	1750	\$136.00	\$185.00	\$208.00
2	6½	28	69	40	45	¼	½	1200	1850	151.00	200.00	223.00
3	7½	30	72	44	48	¾	½	1500	2150	171.50	225.00	248.00
4	8½	32	75	48	50	¾	½	1600	2500	186.50	250.00	279.00
5	10	34	78	52	53	¾	½	1850	2750	206.00	270.00	299.00
6	11	36	75	57	50	¾	½	1950	3100	216.00	290.00	319.00
7	12	36	81	57	57	¾	½	2050	3200	239.00	305.00	334.00
8	13	38	81	68	57	¾	½	2250	3500	256.00	335.00	364.00
9	15	40	75	80	50	¾	½	2250	3800	265.00	360.00	389.00
10	17	40	84	80	57	¾	½	2600	4150	271.00	365.00	394.00
11	21	42	90	88	63	¾	½	2875	4450	305.00	400.00	429.00
12	29	48	96	115	68	¾	½	3850	5800	394.00	505.00	534.00
13	31	48	102	115	72	¾	½	4300	6250	429.00	540.00	588.00
14	35	50	102	124	72	¾	½	4500	6500	466.00	580.00	628.00
15	40	50	114	124	84	¾	½	4950	6950	500.00	617.00	665.00
16	40	53	102	150	72	¾	½	5100	7850	536.00	688.00	736.00
17	50	53	120	150	90	¾	½	5800	8550	571.50	723.00	771.00
18	60	60	120	180	90	¾	½	7000	10000	715.00	880.00	928.00

## Prices of Boiler Fixtures in Detail.

For Pollers Nos.	Price of Cast Iron Base.	Price of Cast Iron Hood or Smoke Box.	Price of Grates, Full Set.	Price of Grate Ring or Rest.	Price of Safety Valve with Nipple.	Price of Steam Gauge with Syphon.	Price of Set of Gauge Cocks. (Three in a Set).	Price of Water Gauge Complete.	Price of Check Valve and Nipple.	Price of Blow off Valve and Nipple.	Price of Inspirator and Fittings attached to Boiler.	Price of Injector and Fittings attached to Boiler.
1	\$23.00	\$3.75	\$4.00	\$1.50	\$3.00	\$5.50	\$3.30	\$2.50	\$1.00	\$1.10	\$23.00	\$32.50
2	23.00	3.75	4.00	1.50	3.00	5.50	3.30	2.50	1.00	1.10	23.00	32.50
3	23.00	4.75	4.25	1.75	3.75	5.50	4.80	3.00	1.00	1.10	23.00	32.50
4	29.50	6.00	6.25	2.50	3.75	5.50	4.80	3.00	1.00	1.10	29.00	39.00
5	29.50	6.00	7.00	2.50	3.75	5.50	4.80	3.00	1.00	1.10	29.00	39.00
6	32.00	11.00	9.00	2.50	5.00	5.50	4.80	3.00	1.00	1.10	29.00	39.00
7	32.00	11.00	9.00	2.50	5.00	5.50	4.80	3.00	1.00	1.10	29.00	39.00
8	32.00	11.00	12.50	3.00	5.00	5.50	4.80	3.00	1.00	1.10	29.00	39.00
9	44.50	13.50	11.50	3.25	5.00	5.50	4.80	3.00	1.40	1.50	29.00	39.00
10	44.50	13.50	11.50	3.25	5.00	5.50	4.80	3.00	1.40	1.50	29.00	39.00
11	44.50	13.50	12.50	3.75	5.00	5.50	4.80	3.00	1.40	1.50	29.00	39.00
12	51.50	14.50	16.00	4.25	6.75	5.50	4.80	3.00	2.25	2.50	29.00	39.00
13	51.50	14.50	16.00	4.25	6.75	5.50	4.80	3.00	2.25	2.50	48.00	63.00
14	51.50	14.50	20.00	4.25	8.50	5.50	4.80	3.00	2.25	2.50	48.00	63.00
15	51.50	14.50	20.00	4.25	8.50	5.50	4.80	3.00	2.25	2.50	48.00	63.00
16	78.50	20.00	22.00	4.75	8.50	5.50	4.80	3.00	2.25	2.50	48.00	63.00
17	78.50	20.00	22.00	1.75	8.50	5.50	4.80	3.00	2.25	2.50	48.00	63.00
18	78.50	22.00	30.00	5.00	10.50	5.50	4.80	3.00	3.50	3.50	48.00	63.00

Smoke Stack furnished at 10 cents per pound.

**HORIZONTAL RETURN TUBULAR BOILER.**

Side View.

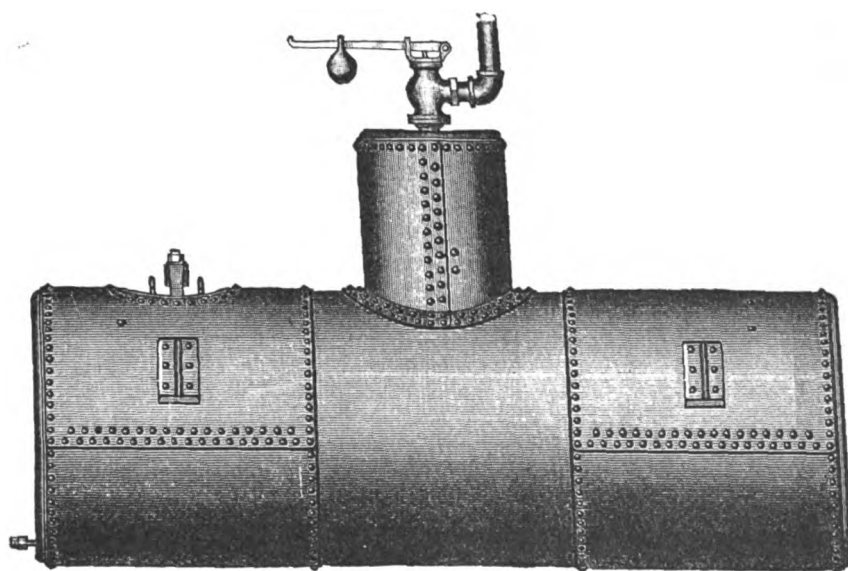


Fig. 2430.

Front View.

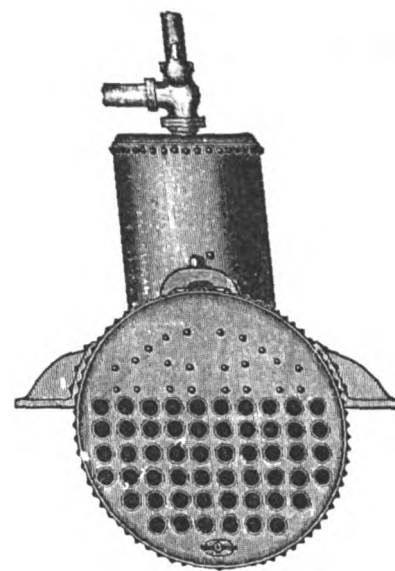


Fig. 2431.

The above style of boiler is usually considered the standard for general stationary uses, manufacturing purposes, etc., and is also well adapted for supplying steam for heating purposes in large buildings, or in other places where they can be set up to advantage. When they are properly proportioned and set they are more economical and durable than any other form of boiler. The materials and workmanship are of superior quality, the design and proportions are based on an extensive experience in the manufacture and use of steam appliances, and they are thoroughly reliable and safe.

**Prices and Dimensions.**

Size. Nos.	Horse Power.	Diameter of Boiler. Inches.	Length of Boiler. Feet.	Thickness of Shell. Inches.	Thickness of Heads. Inches.	Number of 3 Inch Tubes.	Diameter of Steam Dome. Inches.	Height of Steam Dome. Inches.	Diameter Smoke Stack. Inches.	Length Smoke Stack. Feet.	Estimated Weight Boiler only, no Fixtures. Pounds.	Estimated Weight Boiler with Fixtures Complete. Pounds.	Prices, Boiler only, no Fixtures.	Prices, Boiler and Fixtures complete, including Full Flush Front.
23	20	36	10	$\frac{3}{8}$	$\frac{3}{8}$	30	20	22	18	30	3100	5600	\$310.00	\$560.00
24	30	42	11	$\frac{3}{8}$	$\frac{3}{8}$	44	22	24	20	35	4500	7750	450.00	775.00
25	40	48	12	$\frac{7}{16}$	$\frac{7}{16}$	52	26	28	24	40	6100	10250	575.00	950.00
26	50	54	13	$\frac{7}{16}$	$\frac{7}{16}$	66	30	33	26	45	7750	12250	725.00	1125.00
27	60	60	14	$\frac{1}{2}$	$\frac{1}{2}$	79	32	36	28	50	9500	16500	875.00	1500.00
28	80	66	14	$\frac{1}{2}$	$\frac{1}{2}$	100	36	40	30	50	11500	19000	1000.00	1625.00
29	100	66	16	$\frac{1}{2}$	$\frac{1}{2}$	102	36	40	30	50	14000	22000	1200.00	1875.00

Boiler fixtures comprise full flush front with wall anchor bolts and nuts, grates, grate bearers, front wall support plate over ash pit doors, arch bars for back connection, cleaning door and frame for back connection, plate over front connection for smoke stack to rest on, smoke stack and guy rods, safety valve, steam gauge, water gauge, gauge cocks, whistle, blow-off valve, check and stop valves for feed pipes, side wall binding bars and rods, damper in smoke stack, etc., etc.

Grate bars for the above sizes of boilers are respectively 3½ feet, 4 feet, 4½ feet and 5 feet long. The grates are a little wider than the diameters of the boilers. Smoke stacks, included in the above list prices, are made of No. 16 iron. Heavier iron will be used if ordered, but charged for at its extra cost.

The above table gives the standard sizes, but other sizes will be substituted for the above, with either an advance or reduction in price, as the case requires.

Prices for half arch fronts with corresponding fixtures furnished on application.

Steel boilers made to order, and estimates furnished upon application.

Horse power is figured at 15 square feet of heating surface to a horse power.

Inspirators, injectors, or steam pumps and their connections, for feeding water to boilers, will be furnished if wanted.

**PORTABLE WATER BOTTOM LOCOMOTIVE BOILERS.**

This style of boiler is particularly adapted for all duty requiring a portable locomotive boiler, as it is easily moved from place to place, and can be quickly set up ready for work. Made regularly 8, 12, 20 and 30 horse power. Prices on application.

**STATIONARY LOCOMOTIVE BOILERS.**

This style of boiler is adapted for stationary work in places where it is inconvenient to erect the brick work necessary for a return tubular boiler. Made regularly 15, 25, 30, 40, 50, 60, 80 and 100 horse power. Prices on application.

**TWO FLUE AND CYLINDER BOILERS.**

Made to order any size desired. Estimates and drawings will be furnished on application.

**MARINE BOILERS.**

For steam launches, yachts, steam lighters and barges, tugboats, steamboats and steamships. Made to order of all sizes and descriptions. Estimates and drawings furnished on a pplication.

## CIRCULAR SAW MILL.

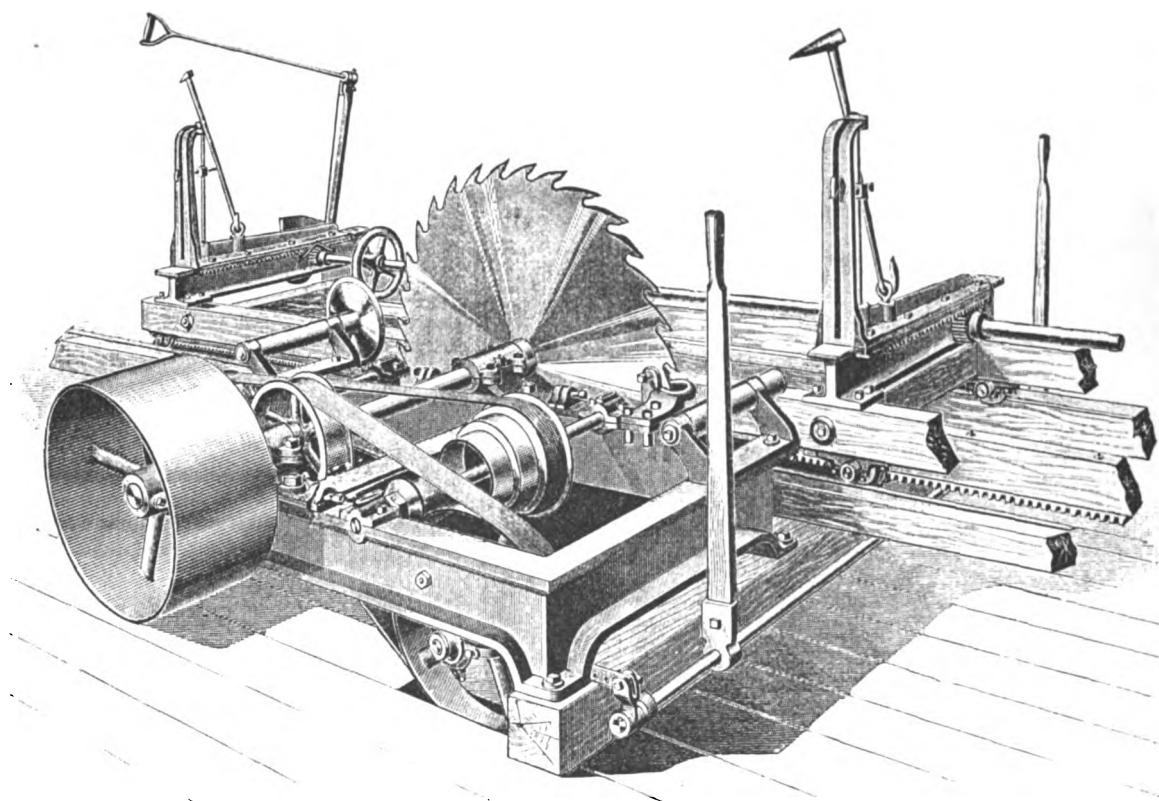


Fig. 2432.

## Description.

I wish to call particular attention of lumbermen and others to the many points of excellence of the Portable Saw Mill shown above. This mill has so universally received the approval of the saw mill men of the country that I know, with the added improvements in principle and workmanship, it has no competition as a portable mill. It has an iron frame cast in one piece, giving it a solidity and durability which no wooden frame can have. The saw mandrel is made of steel, and runs in self-oiling boxes, which are cast in a solid yoke extending across the frame, and is adjusted by means of a set-screw to line the saw. The saw guide is also adjusted by means of screws to fit the saw.

The main pulley is placed outside of the frame to relieve the bearing next to the saw from the strain of the main belt, and give more room between the saw and the belt, greatly promoting convenience and safety in handling the timber. It has friction feed, which is varied at any point to feed slowly while passing through a knot by pressing with less force upon the feed-lever, or the carriage may be stopped by throwing the feed-lever over. The feed-cones are large and broad, giving abundant strength to handle the largest logs. The gig back motion is transmitted by a belt, thus preventing a jerky motion of the carriage and greatly increasing the durability of the feed gearing. The sawyer sets the log and operates the carriage, thus saving one man over the old style of mill. Nos. 2 and 3 have two feed-levers, one on each side of the carriage. The head blocks are heavy rack and pinion blocks, with the teeth in the ratchet wheel of the set rig, machine cut, making the set absolutely accurate by sixteenths of an inch, the throw  $\frac{1}{8}$  to 3 inches.

The No. 1 Mill,  $2\frac{1}{2}$  inch mandrel,  $\frac{3}{4}$  to 1 inch feed, will carry a 52 inch saw, and has a capacity of from 3000 to 5000 feet per day of ten hours, depending upon the power and skill of the operator. Its main pulley has a diameter of 22 inches and 10 inch face. It weighs about 2500 pounds.

The No. 2 Mill,  $2\frac{1}{2}$  inch mandrel,  $\frac{3}{4}$  to 2 inch feed, will carry a 56 inch saw, and has a capacity of from 8000 to 10000 feet per day. Its main pulley has a diameter of 24 inches and 12 inch face. It weighs about 3800 pounds.

The No. 3 Mill, 1 to 3 inch feed, will carry a 60 inch saw, and has a capacity of from 10000 to 15000 feet per day. Its main pulley has a diameter of 26 inches and 14 inch face. It weighs about 4600 pounds.

The three mills are made on the same general plan, varying only in size and capacity. The No. 1, or Pony Mill, having all the good qualities and improvements of the other two sizes, places it, in my judgment, ahead of anything in the market.

By a comparison with other mills whose prices are no lower than these, it must be apparent that an iron frame mill, with steel arbor, the improved head block, the patent board dog, friction feed, and pull over set, etc., cannot but have in it more real value and effective qualities than the light wooden frame mill now advertised through the country.

## Prices, Circular Saw Mills.

No. 1.	No. 2.	No. 3.
With two simultaneous lever or screw head blocks, 18 feet of carriage, 36 feet track iron and feed belts, without saw.....\$250.00	With two simultaneous lever or screw set head blocks, 24 feet of carriage, 48 feet of track iron and feed belts, without saw..\$325.00	With two simultaneous lever or screw set head blocks, 24 feet of carriage, 48 feet of track iron and feed belts, without saw..\$400.00
Extra for additional head block.....30.00	Extra for additional head block.....40.00	Extra for additional head block.....50.00
For each additional foot of carriage.....2.50	For each additional foot of carriage.....3.00	For each additional foot of carriage.....3.00
For foundation or track timbers..per foot, .40	For foundation or track timbers..per foot, .50	For foundation or track timbers..per foot, .60

## PATENT GROUND AND TEMPERED SOLID TOOTH CIRCULAR SAWS.

Extra quality and of superior workmanship. For prices see page 208.

## INSERTED TOOTH CIRCULAR SAWS.

Made 30 to 72 inches diameter. Extra quality. Prices on application.

## PATENT CHISEL POINT CIRCULAR SAWS.

Made 12 to 72 inches diameter. Extra quality. Prices on application.

## STEAM ROCK DRILL.

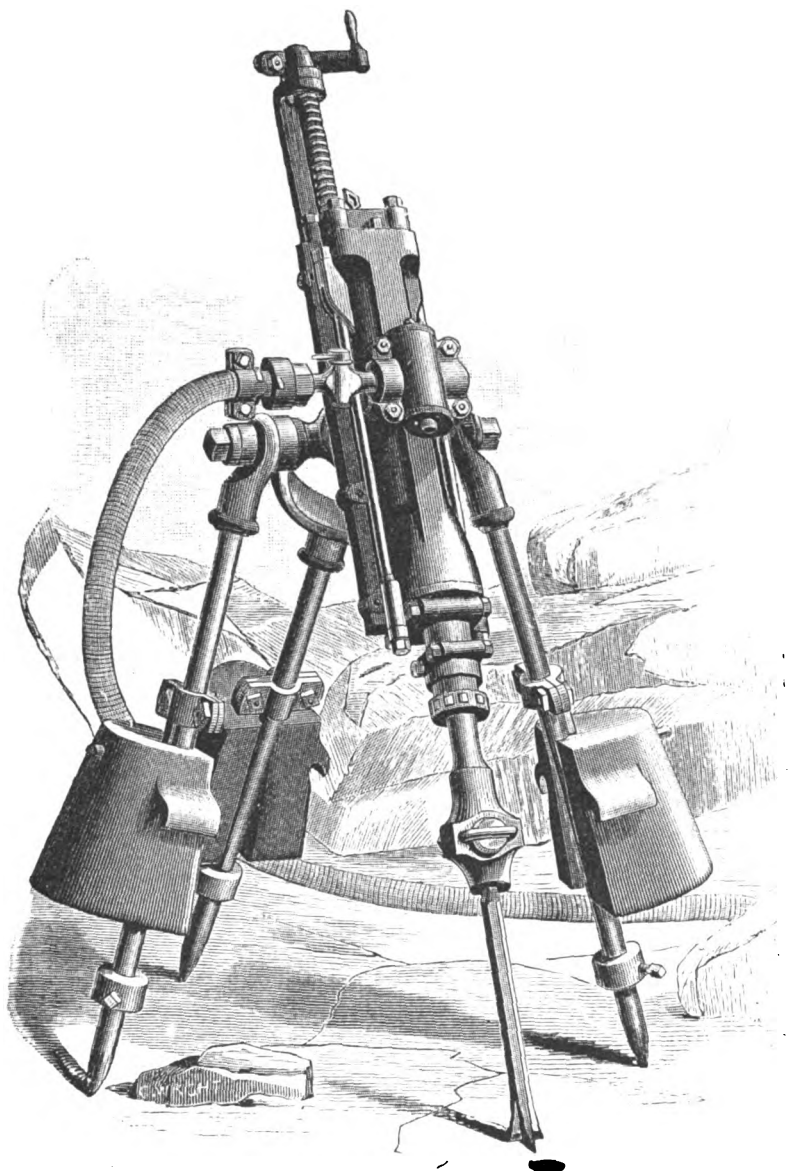


Fig. 2433.

## Description.

This illustration shows the drill mounted on the adjustable tripod which is used for surface work, etc.

The machine fits and works on the tripod; shaft bar or drifting column parts are interchangeable. No rocker arm or tappet to break cylinder. Has independent positive steam-thrown valve, which permits a variable stroke of from 1 to 7 inches. Both cylinder heads are protected on the inside by elastic cushions, which receive the blow of the piston when the bit suddenly cuts into an open seam or hole and allows the piston to make the full stroke in safety.

The automatic feed is always applied to the two largest drills, G and H, unless otherwise ordered. The F size is made with or without the automatic feed as desired. Smaller sizes, A, B, C, D and E, are all made to feed by hand, as they are used principally in underground mining and light quarry work, where extreme simplicity and light weight is essential.

Parties contemplating the adoption of power drills will do well to consult me, giving full particulars in regard to work to be done before deciding on what machines to purchase, and I shall be pleased to give correct advice as to the outfit best suited to the purpose, with prices of same in detail, and all other necessary information.

STEEL DRILLS  
WITH HEADS AND BITS READY FOR WORK.

Fig. 2434.

The bits are forged on the ends of steel bars of different lengths, and are usually made in the form of an X, the diameter of each additional length decreasing slightly to conform to the wear on the shoulders on the preceding bit. On the opposite end a head is turned or forged to fit into drill chuck. In very loose, seamy rock, a Z shaped bit is sometimes used to advantage.

## Dimensions and Capacity.

LETTERS INDICATING SIZE.....	H	G	F	E	D	C	B	A
Diameter of Cylinders.....	5 ins.	4½ ins.	3½ ins.	3½ ins.	3 ins.	2½ ins.	2½ ins.	1½ ins.
Length of Stroke.....	7 "	7 "	6½ "	6 "	6 "	5 "	4 "	3 "
Extreme Length of Drill, from end of Crank to end of piston.....	60 "	60 "	53 "	42 "	40 "	36 "	34 "	36 "
Diameter of Supply Inlet.....	1 "	1 "	1 "	1 "	1 "	¾ "	¾ "	¾ "
Weight of Machine.....	670 lbs.	605 lbs.	345 lbs.	250 lbs.	230 lbs.	195 lbs.	155 lbs.	100 lbs.
Weight of Tripod, without Weights.....	275 "	275 "	150 "	150 "	125 "	125 "	125 "	
Shipping Weight of Drill, Tripod and Weights complete.....	1345 "	1280 "	850 "	700 "	600 "	570 "	530 "	120 "
Approximate number of strokes per minute, with 60 lbs. pressure at drill...	250	250	300	325	325	325	360	400
Approximate weight of blow delivered on the rock at each stroke.....	1500 lbs.	1000 lbs.	750 lbs.	625 lbs.	550 lbs.	500 lbs.	350 lbs.	200 lbs.
Depth drilled without changing bits.....	30 ins.	30 ins.	24 ins.	20 ins.	20 ins.	20 ins.	18 ins.	12 ins.
Average depth drilled per 10 hours, in granite, down holes, including } time lost in setting drill and changing bits.....	70 feet	70 feet	70 feet	70 feet	60 feet	60 feet	50 feet	
Depth of vertical hole each machine will drill easily.....	From 1 to 40 "	30 "	16 "	12 "	10 "	7 "	4 "	2 feet
Depth of horizontal hole each machine will drill easily.....	From 1 to 30 "	15 "	12 "	10 "	7 "	5 "	3 "	2 "
Diameter of holes drilled, as desired.....	From 3 to 6 in.	2 to 4 in.	1½ to 2½ in.	1½ to 2½ in.	1½ to 2 in.	1½ to 2 in.	1 to 1½ in.	¾ to 1½ in.
Diameter of drill steel used.....	1½ & 1½ in.	1½ & 1½ in.	1½ & 1½ in.	1½ & 1½ in.	1½ & 1½ in.	1½ & 1½ in.	1 inch	¾ inch
Number of pieces in set of steels to drill holes of depths above stated.....	16	12	8	7	6	4	3	2
Approximate weight of one set steels to drill vertical holes of depths } above stated.....	2400 lbs.	1500 lbs.	380 lbs.	160 lbs.	125 lbs.	60 lbs.	20 lbs.	8 lbs.
Best size of boiler to give plenty of steam at high pressure.....	12 H.-P.	12 H.-P.	10 H.-P.	10 H.-P.	8 H.-P.	7 H.-P.	5 H.-P.	2 H.-P.
Best size of steam supply pipe, carrying steam 100 to 200 feet.....	1½ to 2 in.	1½ to 2 in.	1½ in.	1½ in.	1½ in.	1 in.	1 in.	¾ to 1 in.

Prices on application.

## THE BRENNAN ROCK BREAKER AND ORE CRUSHER.

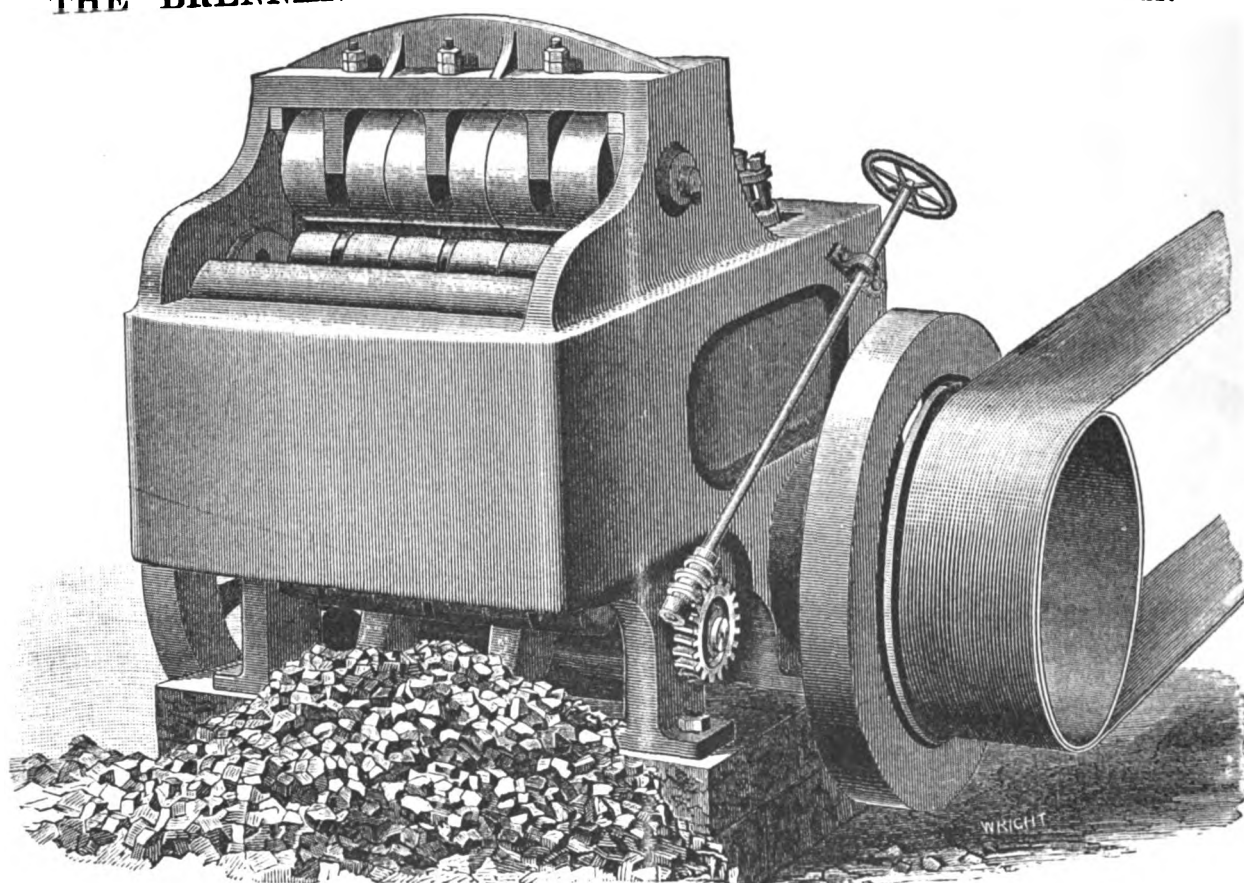


Fig. 2435.

## Description.

This Crusher contains many improvements of great value, including among others an entirely new and completely effective principle in the crushing and discharging action.

The range of work of all sizes of this Crusher extends from coarsest railroad ballast to the finest that can be produced by the smallest crushers heretofore made. The changes in the size of the product can be made in a few minutes and while the machine is actually running and breaking stone.

The stroke of the jaw can be adjusted to be more or less at either the upper or the lower ends, or it can have the same amount of stroke throughout. The crushing action can be varied in every case to suit the kind of rock to be crushed and the required size and degree of uniformity of the product. After making a stroke the lower end of the receiver rests open so as to allow the crushed material time to escape, while the impact of the jaw against the cam, as its return motion is arrested, jars the broken rock down and hurries it through the discharge opening.

This improved discharging action alone greatly increases the effectiveness of this machine over all others, and makes it possible to take advantage of a short stroke at the lower end of the jaw, combined with high speed, without reducing the capacity of the machine, which can be done in no other crusher.

The forward toggle is made with a transverse hole through its center, and is proportioned so as to break under any undue or extraordinary strain, thus being an insurance within itself against the serious breakdowns that so often occur and are so difficult to guard against in working crushers, arising from the carelessness of men in allowing pieces of iron and steel, such as sledge hammers, bars, drill points, etc., to get into the machine.

This thoroughly effective safety device is inexpensive, can be quickly replaced, and is possessed by no other crusher.

In this machine the frame is extended across the top and bottom so as to firmly support the working jaws and the crank shaft. This construction makes it practicable to build these machines of any required size, so that rock can be dumped into them instead of having to be fed laboriously by hand.

The placing of the crank shaft on the lower side of the frame, combined with the balanced and continuous crushing produced by the two or more jaws working side by side alternately, gives the machine great stability, so that it runs without shaking or jarring the foundation or building.

## Dimensions and Capacity.

No.	Receiving Capacity: Inches.	Approximate Product per Hour Macadam Size.	Approximate Weight.	Driving Pulley. Diam.	Face.	Proper Speed per Minute.	Horse Power Required.
1	14x48	50 to 60 tons	50000 lbs.	48 ins.	16 ins.	275 rev.	40 to 50
2	12x37	30 to 40 "	32000 "	40 "	14 "	300 "	30 to 40
3	10x25	20 to 25 "	16000 "	36 "	12 "	300 "	20 to 30
4	8x25	15 to 18 "	13000 "	30 "	12 "	300 "	15 to 20
5	7x20	12 to 15 "	10000 "	27 "	10 "	350 "	12 to 15
6	5x20	10 to 12 "	7000 "	21 "	9 "	400 "	8

Prices on application.



## FORSTER'S ORE AND ROCK BREAKER.

## Description.

This machine is simple and very durable. Owing to the great gain in leverage and the continuous and positive motion, 50 per cent. greater product is produced with but one-third the power of any other crusher. This result is accomplished with a machine which is 40 per cent. less in weight, which is an important item in saving freight, also a great saving in cost of repairs.

This breaker does not shatter the stone, producing railroad ballast and macadam equal to hand hammered, at one-third the cost.

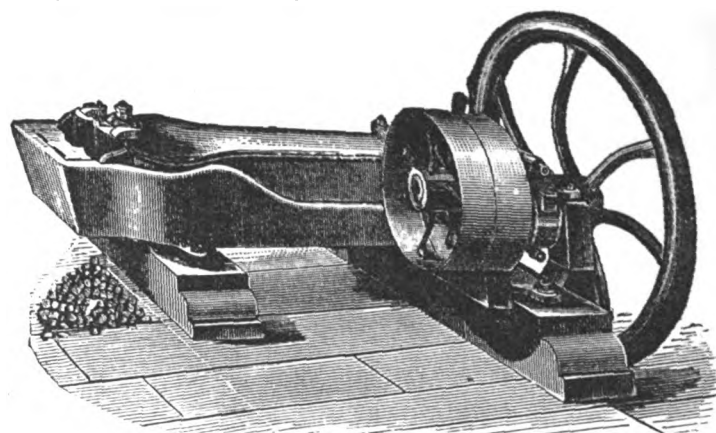


Fig. 2436.

## Prices and Dimensions, Coarse Crushers.

For blast furnace, railroad ballast, macadam, and all general mining purposes.

Nos.	Opening in Jaws, Inches.	Revolutions per Minute	Horse Power.	Width of Belt.	Diameter of Pulley.	Weight Heaviest Piece.	Total Weight.	10 Hours, 1 1/2 to 2 1/2 Ring Gauge.	Floor Space Required, Feet.	Each.	Extra Sets Dies per Set.
1	4x9	350	1	2 ins.	10 ins.	700 lbs.	1800 lbs.	10 tons	4 1/2 x 3 1/2	\$190.00	\$10.00
2	5x15	300	3	4 "	18 "	2200 "	4500 "	45 "	6 x 4 1/2	390.00	25.00
3	7x18	300	5	6 "	22 "	3500 "	6400 "	65 "	7 x 5 1/2	570.00	35.00
4	9x28	275	6	7 "	22 "	4000 "	8000 "	65 "	8 x 6	650.00	40.00
5	12x24	250	8	9 "	30 "	8500 "	15000 "	125 "	11 x 7 1/4	1000.00	90.00

## Prices and Dimensions, Coarse Crushers.

Will crush from a 3/4 inch ring gauge down to a No. 4 mesh, and is especially adapted for use in connection with burr stones, stamp mills and other grinding mills, as it reduces finer than any other crusher.

Nos.	Opening in Jaws, Inches.	Revolutions per Minute.	Horse Power.	Width of Belt.	Diameter of Pulley.	Weight Heaviest Piece.	Total Weight.	Capacity per 10 Hours, Net Tons.	Floor Space Required, Feet.	Each.	Extra Dies per Set.
11	4x9	350	1	2 ins.	10 ins.	700 lbs.	1800 lbs.	3/4 Inch, 6	4 1/2 x 3 1/2	\$220.00	\$10.00
12	5x15	300	3	4 "	18 "	2200 "	4500 "	1/2 Inch, 15	6 x 4 1/2	420.00	25.00
13	7x18	300	5	6 "	22 "	3500 "	6400 "	No. 4 Mesh, 25	7 x 5 1/2	630.00	35.00
15	12x24	250	8	9 "	30 "	8500 "	15000 "	10	11 x 7 1/4	1150.00	90.00

## Prices and Dimensions, Combined Crushers and Pulverators.

For use on limestone, land plaster and similar minerals that have no grit in them. It is very desirable in preparing fertilizers for farming purposes.

Nos.	Opening in Jaws, Inches.	Revolutions per Minute.	Horse Power.	Width of Belt.	Diameter of Pulley.	Weight Heaviest Piece.	Total Weight.	Capacity per 10 Hours.	Floor Space Required, Feet.	Each.	Extra Dies per Set.
21	3x9	350	1	2 ins.	10 ins.	700 lbs.	1800 lbs.	No. 10 Mesh, 2000 lbs.	4 1/2 x 3 1/2	\$190.00	\$10.00
22	3x15	300	3	4 "	18 "	2200 "	4500 "	No. 20 Mesh, 1500 lbs.	6 x 4 1/2	390.00	25.00
23	5x18	300	5	6 "	22 "	3500 "	6400 "	No. 40 Mesh, 1000 lbs.	7 x 5 1/2	570.00	35.00

## BLAKE PATTERN STONE AND ORE CRUSHER.

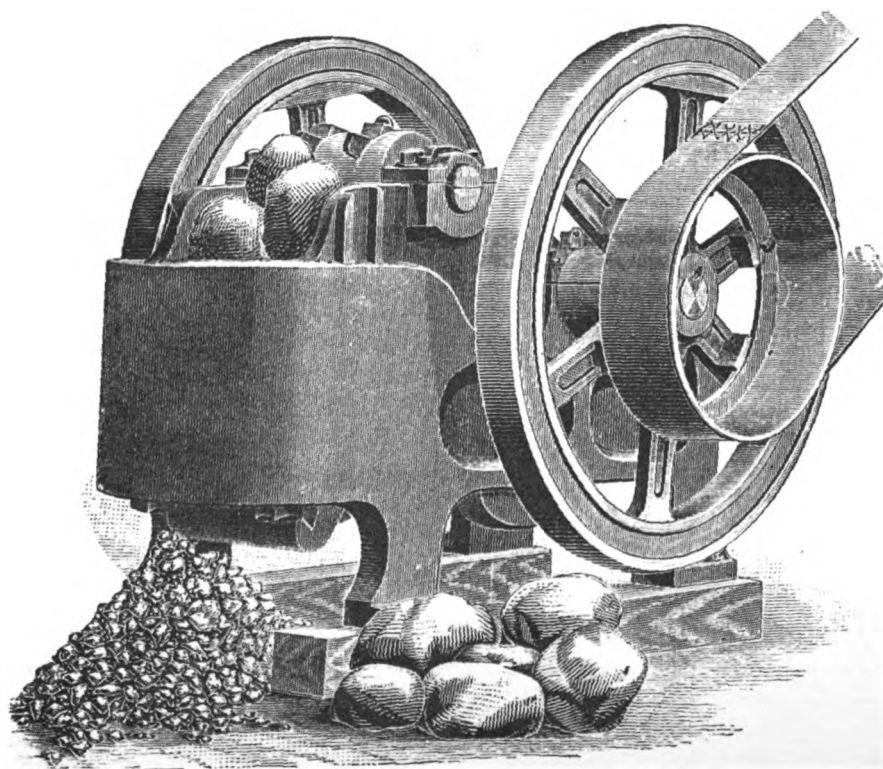


Fig. 2437.

This Breaker is constructed with a positive motion, the stone being broken without the use of springs and cushions.

## Prices and Dimensions.

Nos.	Size or Receiving Capacity, Inches.	Approximate product per hour, in cubic yards, to two ins.	Weight of Heaviest Piece, Pounds.	Total Weight, Pounds.	Driving Pulley, Diam. Ins.	Proper Speed, Revolutions.	Horse Power Required.	Each.
3	10x4	3	1800	4900	20	6	250	6 \$275.00
4	10x7	5	3800	7800	24	7 1/2	250	12 500.00
5	15x9	8	6800	14500	30	9	250	15 750.00
6	15x10	9	7300	15000	30	10	250	15 800.00
*7	20x6	10	4800	11000	30	10	250	15 650.00
8	20x10	10	7700	17000	36	12	250	20 1050.00

Hand Power Crusher, 6x2 ..... each, \$150.00

Laboratory Size ..... " 40.00

\*The No. 7 is for breaking iron ore or limestone.

A cubic yard of stone is about one and one-third tons.

In getting an engine to drive one of these crushers, it is advisable to have one of greater power than is stated in the table as being required. It is much more economical to use 9 horse power from a 12 or 15 horse than from a 9 or 10 horse engine.

## VICTORIA COFFEE HULLER.

THORNTON N. MOTLEY, SOLE AGENT.

HAND MACHINE, No. 1.

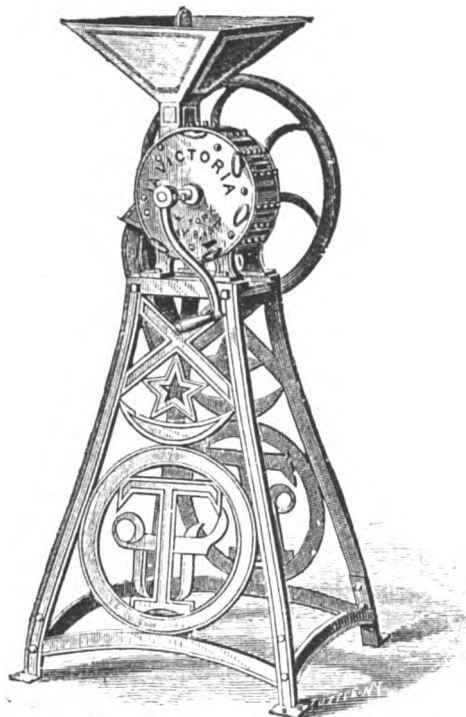


Fig. 2438.

POWER MACHINE, No. 3.

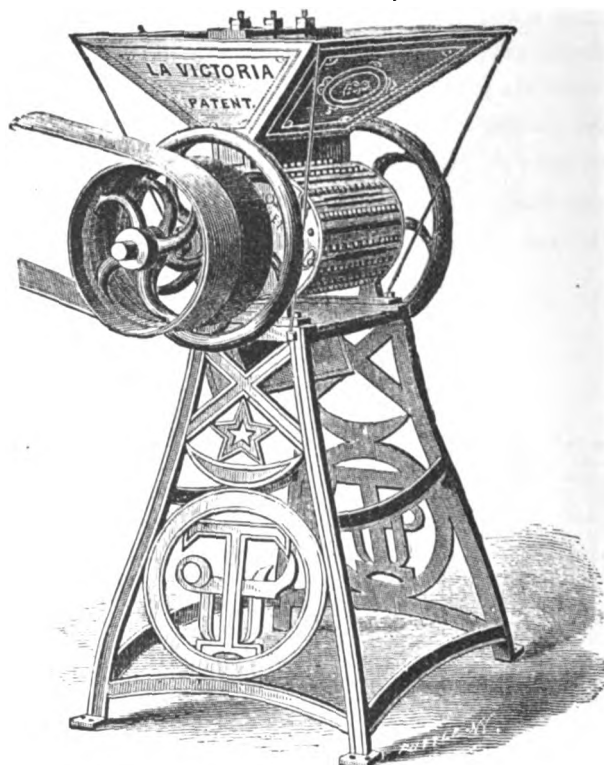


Fig. 2439.

## Description.

The principle of this Huller is such that the combination of floats (hulling iron, rubbers—the pieces under which the coffee passes when being hulled) can be regulated, and their pressure graduated to act upon any condition or quality of berry, and they (the floats) will conform to those of irregular sizes, hulling the smaller and larger berries at the same time.

The machine separates the outer covering (the skin or pulp), the parchment as well as the silver skin, leaving the bean a rich color with a good polish, this being accomplished in the same machine, and not by a crusher, in conjunction with a pulper, which is so difficult of adjustment as not only to nip or cut the bean, which amounts to irremediable damage, but also cracks and breaks a large percentage of the coffee. It dispenses with the peeling mills, and separates the light and worthless berries from the good.

It is simple in construction, easy of application, cheap in price, and saves the otherwise necessary expenditure for the apparatus and many fixtures attached to the pulping house. It is perfectly adapted to coffee producing countries, and effectually guards against the many contingencies—the want of power and application from the scarcity of water, which is an essential element in the use of a pulper—a short supply of labor, which difficulty, in some countries, is often experienced by the desertion of coolies.

It is built entirely of iron, in order to provide against the destructive influence of tropical climates, and for the purpose of securing the greatest durability under continued usage. The mechanism is so uncomplicated that it cannot be got out of repair, except with great difficulty; and, with our card of directions and explanation, the working of the same is made intelligible to the most ordinary laborer.

It hulls the deep purplish crimson colored berry, fully ripe, which insures the coffee arriving at perfection.

It hulls the unripe berry when green, or after having dried, notwithstanding the strong adhesion of the pulp of the berry, in the absence of saccharine matter.

It hulls the berry, which, in hot weather, often dries up and shrinks on the trees, and this it performs without the soaking of the berry in water, as is necessary with the pulper.

Small stones or other hard substances among the coffee will pass through the machine without injuring it.

The machines shown above are for hulling and polishing only. They can be used to peel washed coffee (parchment), and are superior to any other implement for that purpose.

This form of machine (without the fan) is employed when the coffee is so cured or in such condition that the hull or pulp of the berry is not sufficiently of less weight than the bean to be more easily acted upon by the blast and blown out from the bean. When the pulp becomes dried it may be separated with a fanning mill.

## Prices and Capacity.

No. 1, for hand, capacity 100 pounds per hour.....	each, \$100.00
" 2, " or power, capacity 200 pounds per hour.....	" 200.00
" 3, for power, capacity 300 pounds per hour.....	" 300.00
" 4, " " 400 " " .....	" 400.00
" 5, " " 500 " " .....	" 500.00

Fanning Mills for above machine furnished when so ordered. All parts of machines are interchangeable, and repairs can be furnished at any time.

## VICTORIA COFFEE HULLER AND SEPARATOR.

THORNTON N. MOTLEY, SOLE AGENT.

HAND MACHINE No. 11.

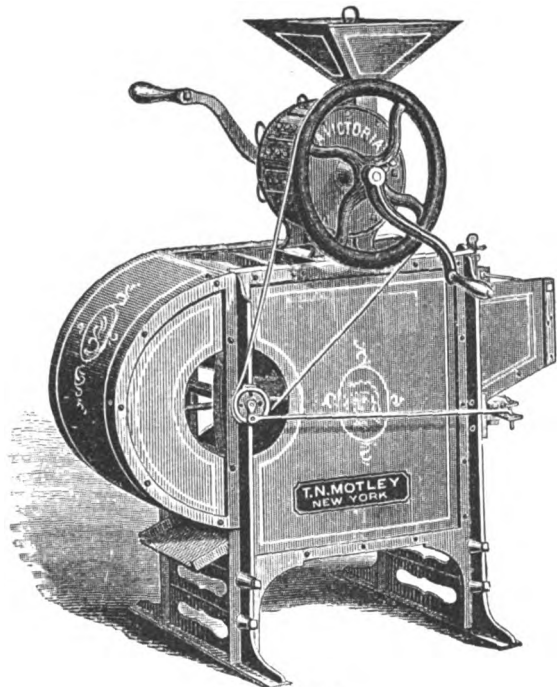


Fig. 2440.

POWER MACHINE, No. 15.

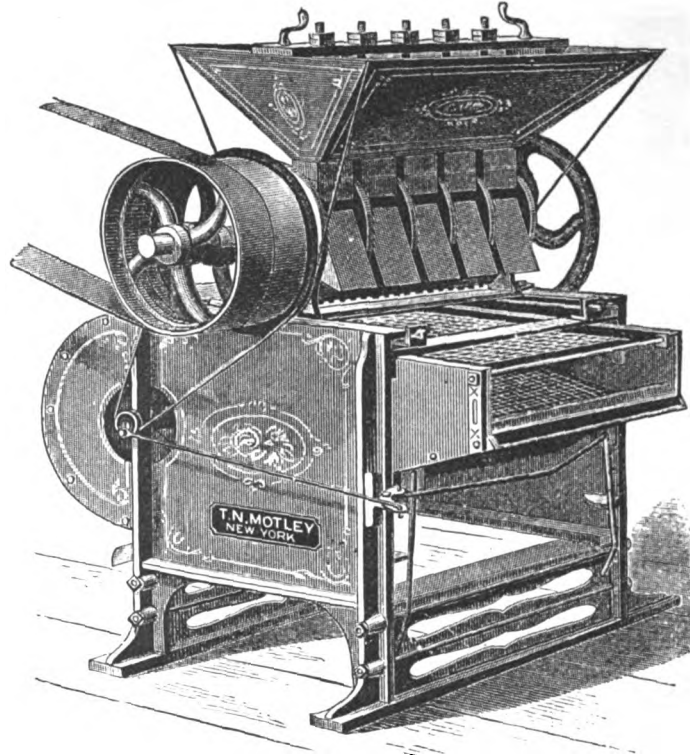


Fig. 2441.

## Description.

The above cuts show the combined Huller, Polisher, Cleaner and Separator. This machine is used when the coffee is so cured or in such condition that the hull or pulp of the berry is sufficiently of less weight than the bean to be more easily acted upon by the blast and blown out from the bean.

The use of this machine dispenses with the many separate machines which are required as accessories in the common manner of preparing coffee for market. The principle of Huller is same as explained on page 300.

The most thorough tests have been made with unhulled coffee from various sections of the world, independent of the severest trials abroad. Many of these experiments have been made upon coffee of the most inferior description—berries which were of a diminutive size, partly decayed, badly cured, and of the lowest grade generally; but the construction of the machine is such that these defects do not prevent the uniform delivery of a perfectly hulled sample.

The hulling irons or floats are marked in every machine 1, 2, 3, 4, 5, and the head of the cylinder carries corresponding marks. The floats must be set in the machine opposite the respective numbers. The cylinder should generally make between 60 and 80 revolutions per minute, and when the coffee becomes dry and brittle the speed should be decreased accordingly, but not under 40 revolutions. Care should be taken that the crank is turned uniformly that the cylinder may run evenly.

Two sets of floats are furnished with each machine in order to accommodate the machine to either dry or green coffee. The floats which are painted green are to be used on tough coffee; those painted red on dry coffee, that is coffee which has a dry and brittle shell or hull.

For coffee very damp and tough use all the green floats.

For coffee partially damp use four green floats and red float No. 5.

For coffee very little damp use green floats Nos. 2 and 3 and red floats Nos. 1, 4 and 5.

For coffee which is dry and brittle use all the red floats.

After having hulled the coffee then take out floats Nos. 2, 3, 4 and 5 and substitute brushes in their places, except where coffee is unusually brittle, then use the entire five brushes. This operation will polish the coffee ready for market.

## Prices and Capacity.

No. 11, for hand, capacity 100 pounds per hour.....	each, \$150.00
" 12, " or power, capacity 200 pounds per hour.....	" 260.00
" 13, for power, capacity 300 pounds per hour.....	" 370.00
" 14, " " 400 " " .....	" 480.00
" 15, " " 500 " " .....	" 590.00

Machines of any desired capacity will be built to order. All parts of machines are interchangeable, and repairs can be furnished at any time.

# **BALANCED PULLEYS.** **DOUBLE ARM PULLEY.**

SINGLE ARM PULLEY.

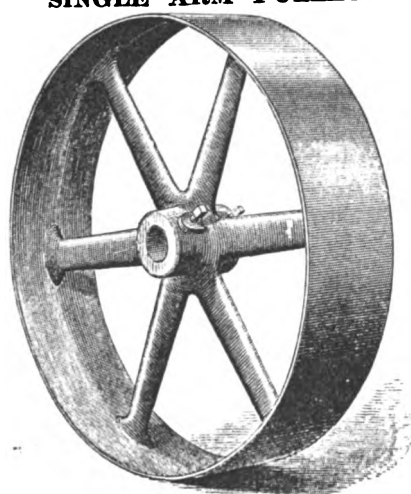


Fig. 2442.

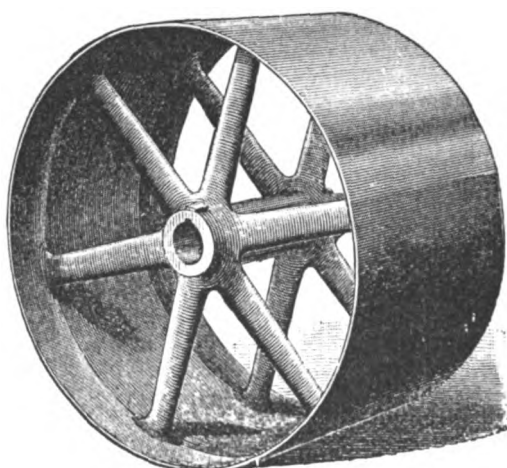


Fig. 2443.

SPLIT OR HALVED PULLEY.

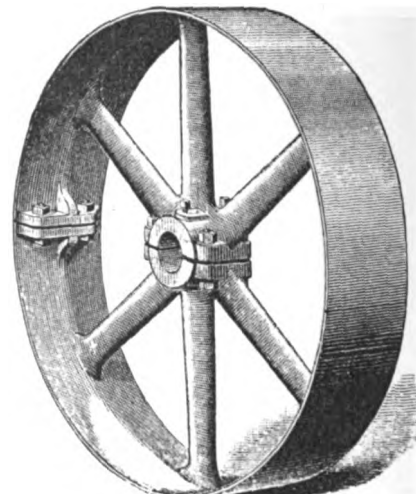


Fig. 2444.

Single Belt Pulleys are supplied with one or two set screws according to size. Double Belt Pulleys are provided with two set screws or a key-way. An extra charge will be made when both set screwed and key seated. All pulleys are bored to the Whitworth gauge. Pulleys ordered with extra large bore in proportion to their diameter and width of face are subject to an extra charge. Pulleys ordered from  $\frac{1}{2}$  to  $\frac{3}{4}$  inch wider than listed below take price of next following width.

Pulleys of 36 inches diameter and over may be ordered with two sets of arms, for which an extra charge will be made. Key-ways cut in single belt pulleys will be charged extra.

In ordering pulleys state exact size (diameter) of shaft, and whether the face is to be round (high) for stationary belt, or straight (flat) for shifting belt. Also state if required for light work (for single belt) or for heavy work (for double belt).

For tight and loose pulleys the face of each should be rounding.

## **Prices, Finished Pulleys, Fig. 2442.**

Bored, turned, balanced, with set screws or key ways.

Diam. Inches.	Width Face, Ins.	Single Belt. Each.	Diam. Inches.	Width Face, Ins.	Single Belt. Each.	Diam. Inches.	Width Face, Ins.	Single Belt. Each.	Diam. Inches.	Width Face, Ins.	Single Belt. Each.	Double Belt. Each.	Diam. Inches.	Width Face, Ins.	Single Belt. Each.	Double Belt. Each.											
6	3	\$1.30	10	8	\$4.10	14	6	\$4.50	18	3	\$3.85	\$5.65	21	6	\$6.50	\$8.30											
	4	1.45		9	4.50		7	4.90		4	4.40	6.20		7	7.20	9.20											
	5	1.75		10	4.80		8	5.20		5	4.95	6.75		8	7.90	10.00											
	6	2.00		12	5.60		9	5.70		6	5.50	7.30		9	8.65	11.00											
	7	2.40		14	6.40		10	6.10		7	6.05	8.05		10	9.40	11.80											
	8	2.75		12	7.10		8	6.60		8.75	12	11.00		14.15													
7	3	1.50	11	3	2.55	15	3	3.30	19	3	4.00	5.85	22	4	5.30	7.10											
				4	2.70												7	5.10	5	6.10	7.90						
				5	3.15												8	5.50	6	6.85	9.55						
				6	3.50												9	6.00	7	7.90	10.30						
				7	3.80												10	6.50	8	9.10	11.85						
				8	4.40												12	7.50	10	10.80	13.80						
	4	2.35	7	3.80	6	4.30	16	12.50	15.85	18	14.90	18.50	20	22.00	26.35												
																5	4.70	7	5.10	9	6.00	6.60					
																6	5.10	8	5.50	10	6.50	7.10					
																7	5.90	9	6.00	12	7.50	8.80					
8	3	1.75	12	3	2.80	16	3	3.50	20	3	4.55	6.35	23	4	5.60	7.75											
																	4	1.95	4	3.10	7	6.40	8.40	10	10.00	12.40	
																	5	2.40	5	3.40	8	7.00	9.15	12	11.80	15.15	
																	6	3.00	6	3.70	9	7.80	10.10	14	13.90	17.50	
																	7	3.40	7	4.30	10	8.30	10.70	16	16.40	20.35	
																	8	3.70	8	4.60	12	9.70	12.60	18	19.70	23.90	
	4	2.30	7	4.30	6	5.00	14	11.50	14.70	16	13.40	16.85	18	16.10	19.85	23	5	7.20	8.60								
																				5	4.90	9	4.90	6.70	7	8.15	10.40
																				6	5.30	10	5.40	7.35	8	8.90	11.30
																				7	5.80	12	6.20	8.00	9	9.75	12.55
																				8	6.10	14	7.30	8.80	10	10.60	13.35
																				9	7.00	16	10.80	9.65	12	12.50	16.10
9	3	2.00	13	3	2.90	17	3	3.70	21	4	5.15	7.00	24	4	5.90	8.10											
																	4	3.30	4	4.20	6	6.70	7.50	9.65			
																	5	3.70	5	4.70	7	7.50	8.80	10	10.80	13.35	
																	6	4.15	6	5.20	8	8.20	10.50	12	12.50	16.10	
																	7	4.55	7	5.70	9	8.90	11.30	14	14.80	18.75	
																	8	5.00	8	6.20	10	10.30	13.30	16	17.50	21.70	
	4	2.60	7	4.30	6	5.20	12	12.30	15.65	14	14.30	17.90	18	20.90	25.45	29.40											
																	5	5.40	16	17.40	21.35	5	6.70	8.90			
																	6	5.80	18	19.70	23.90	6	7.50	9.65			
																	7	6.10	20	20.80	25.00	7	8.45	10.80			
10	3	2.30	14	3	3.20	18	4	5.15	7.00	21	5	5.80	7.65	8	9.40	11.80											
																	4	3.60	6	6.60	8	8.65	11.00				
																	5	4.20	8	8.75	10	11.00	14.15				
																	6	4.80	10	13.10	16.55						
																	7	5.40	12	15.30	19.05						

BALANCED PULLEYS.—CONTINUED.

Prices, Finished Pulleys, Fig. 2442.

Bored, turned, balanced, with set screws or key ways.

Diam. In.	Width Face. In.	Single Belt. Each.	Double Belt. Each.	Diam. In.	Width Face. In.	Single Belt. Each.	Double Belt. Each.	Diam. In.	Width Face. In.	Single Belt. Each.	Double Belt. Each.	Diam. In.	Width Face. In.	Single Belt. Each.	Double Belt. Each.	Diam. In.	Width Face. In.	Single Belt. Each.	Double Belt. Each.						
24	9	\$10.35	\$13.00	30	12	\$18.70	\$23.25	36	16	\$32.20	\$38.80	45	14	\$39.00	\$48.20	53	10	\$40.20	\$50.00						
	10	11.30	14.00		14	21.80	26.60		18	36.80	44.00		16	44.10	54.00		12	44.80	55.40						
	12	13.30	16.90		16	25.40	30.55		20	42.70	50.50		18	50.20	60.60		14	50.80	62.30						
	14	15.70	19.65		18	29.20	34.60						20	57.60	68.60		16	56.90	69.80						
	16	18.70	22.90		20	31.30	40.05		37	6	15.90	20.00					18	64.20	78.00						
	18	22.10	26.65										46	6	24.20	30.80		20	73.20	87.50					
	20	26.00	30.80		31	4	9.00	12.15		8	18.90	23.40		8	28.20	35.40		22	83.00	104.00					
25	4	6.50	8.75		5	10.35	13.55		10	22.00	26.65		10	31.60	39.40		24	93.60	120.00						
	5	7.40	9.70		6	11.70	14.85		12	25.40	31.10		12	35.60	44.40										
	6	8.30	10.55		7	12.85	16.20		14	29.20	35.50		14	40.30	49.90		54	6	32.60	41.60					
	7	9.10	11.60		8	14.00	17.45		16	33.40	40.30		16	45.80	56.00		8	37.50	47.10						
	8	10.00	12.55		9	15.40	19.05		18	38.10	45.60		18	51.90	62.70		10	41.50	51.70						
	9	10.95	13.70		10	16.80	20.55		20	44.10	52.20		20	59.30	70.70		12	46.30	57.20						
	10	11.90	14.75		12	19.70	24.35										14	52.40	64.20						
	12	14.10	17.85		14	22.90	27.85		38	6	16.70	20.90		47	6	25.20	32.10		16	58.60	71.80				
	14	16.70	20.75		16	26.60	31.85		8	19.70	24.50		8	29.30	36.80		18	66.00	80.00						
	16	19.80	24.15		18	30.50	36.05		10	22.80	28.20		10	32.80	40.90		20	75.50	89.90						
	18	23.30	27.95		20	35.70	41.75		12	26.50	32.50		12	36.70	45.60		22	85.00	105.70						
	20	27.30	32.25						14	30.30	36.90		14	41.70	51.50		24	96.00	122.80						
26	4	6.90	9.30		32	4	9.40	12.75		16	34.60	41.80		16	47.40	58.00									
	5	7.80	10.20		5	10.85	14.20		18	39.40	47.20		18	53.70	65.00		55	6	33.70	43.00					
	6	8.70	11.10		6	12.30	15.65		20	45.70	54.10		20	61.10	72.80		8	38.70	48.60						
	7	9.65	12.30		7	13.55	17.00										10	42.80	53.30						
	8	10.60	13.35		8	14.80	18.40		39	6	17.70	22.20		48	6	26.20	33.40		12	47.80	59.00				
	9	11.65	14.60		9	16.20	20.00		8	20.80	25.90		8	30.40	38.20		14	54.00	66.00						
	10	12.70	15.70		10	17.60	21.50		10	23.80	29.50		10	34.00	42.40		16	60.60	74.10						
	12	15.00	18.95		12	20.60	25.40		12	27.60	34.00		12	38.00	47.00		18	68.00	82.50						
	14	17.70	21.90		14	23.90	29.05		14	31.50	38.60		14	43.20	53.20		20	77.70	92.70						
	16	20.90	25.45		16	27.70	33.10		16	35.80	43.30		16	49.00	60.20		22	87.50	108.70						
	18	24.50	29.30		18	31.80	37.55		18	40.80	48.90		18	55.50	67.30		24	98.40	125.70						
	20	28.70	33.85		20	37.10	43.45		20	47.20	55.90		20	62.90	74.90										
27	4	7.20	9.75		33	4	9.90	13.35		40	6	18.60	23.40		47	6	25.20	32.10		56	6	34.80	44.40		
	5	8.25	10.85		5	11.45	15.90		8	21.80	27.20		8	30.40	38.20		8	39.90	50.10		8	39.90	50.10		
	6	9.30	11.85		6	13.00	16.45		10	24.80	30.80		10	34.00	42.40		10	44.00	54.80		10	44.00	54.80		
	7	10.30	13.00		7	14.30	17.90		12	28.80	35.50		12	38.00	47.00		12	49.30	60.80		12	49.30	60.80		
	8	11.30	14.15		8	15.60	19.35		14	32.70	40.00		14	43.20	53.20		14	55.50	67.80		14	55.50	67.80		
	9	12.40	15.45		9	17.00	20.90		16	37.10	45.00		16	49.00	60.20		16	62.70	76.50		16	62.70	76.50		
	10	13.50	16.65		10	18.40	22.45		18	42.30	50.70		18	55.50	67.30		18	70.00	84.80		18	70.00	84.80		
	12	16.00	20.05		12	21.50	26.45		20	49.00	58.00		20	62.90	74.90		20	79.90	95.50		20	79.90	95.50		
	14	18.70	23.05		14	24.90	30.35						22	75.00	93.50		22	90.00	111.00		22	90.00	111.00		
	16	22.00	26.65		16	28.80	34.50		41	6	19.40	24.50		22	83.90	108.40		24	101.00	129.00		24	101.00	129.00	
	18	25.60	30.55		18	32.90	39.00		8	22.80	28.50		24	81.50	105.50										
	20	30.10	35.35		20	38.40	45.00		10	25.80	32.10						57	6	36.00	45.90		6	36.00	45.90	
28	4	7.60	10.35		34	4	10.40	14.00		12	29.90	37.00		49	6	27.20	34.70		8	41.00	51.50		8	41.00	51.50
	5	8.30	11.50		5	12.05	15.65		14	33.90	41.75		8	31.60	39.70		10	44.00	54.80		10	44.00	54.80		
	6	9.90	12.65		6	13.70	17.30		16	38.30	46.40		10	35.20	43.90		12	49.30	60.80		12	49.30	60.80		
	7	10.90	13.80		7	15.00	18.60		18	43.70	52.40		12	39.30	48.80		14	55.50	67.80		14	55.50	67.80		
	8	11.90	14.90		8	16.30	20.25		20	50.40	59.70		14	44.70	55.00		16	62.70	76.50		16	62.70	76.50		
	9	13.70	16.20		9	17.80	21.40						16	50.60	62.20		18	70.00	84.80		18	70.00	84.80		
	10	14.30	17.65		10	19.30	23.50		42	6	20.30	25.70		18	57.20	69.50		20	79.90	95.50		20	79.90	95.50	
	12	16.90	21.10		12	22.40	27.55		8	23.90	29.90		20	66.90	80.50		22	92.40	114.30		22	92.40	114.30		
	14	19.70	24.25		14	25.90	31.65		10	26.90	33.50		22	77.00	96.00		24	103.80	132.20		24	103.80	132.20		
	16	23.10	27.90		16	29.90	35.90		12	31.10	38.60		24	86.30	111.30										
	18	26.90	32.05		18	34.20	40.55		14	35.00	43.20						58	6	37.20	47.40		6	37.20	47.40	
	20	31.50	36.90		20	39.80	46.75		16	39.70	48.10		51	6	29.30	37.40		8	42.30	53.10		8	42.30	53.10	
29	4	8.00	10.85		35	4	10.90	14.65		18	45.30	54.30		8	33.90	42.60		10	46.70	58.10		10	46.70	58.10	
	5	9.25	12.15		5	12.65	16.40		20	52.00	61.60		10	37.70	47.00		12	52.30	64.40		12	52.30	64.40		
	6	10.50	13.35		6	14.40	18.15						12	42.00	52.00		14	58.80	71.40		14	58.80	71.40		
	7	11.50	14.50		7	15.80	19.70		43	6	21.30	27.00		14	47.80	58.60		16	66.50	81.50		16	66.50	81.50	
	8	12.50	15.65		8	17.20	21.25		8	25.00	31.30		16	53.70	66.00		18	74.40	90.00		18	74.40	90.00		
	9	13.80	17.05		9	18.70	22.70		10	28.00	34.90		18	60.80	74.00		20	84.30	100.50		20	84.30	100.50		
	10	15.10	18.45		10	20.20	24.55		12	32.20	40.00		20	69.00	82.80		22	95.00	117.20		22	95.00	117.20		
	12	17.80	22.15		12	23.40	28.65		14	36.30	44.70		22	79.00	98.40		24	106.70	135.50		24	106.70	135.50		
	14	20.80	25.45		14	27.00	32.85		16	41.10	50.00		24	88.80	114.20										
	16	24.20	29.15		16	31.10	37.40		18	46.90	56.40						59	6	38.40	48.90		6	38.40	48.90	
	18	28.00	33.25		18	35.40	42.15		20	53.90	64.00		52	6	30.40	38.80		8	43.50	54.60		8	43.50	54.60	
	20	32.90	38.45		20	41.20	48.55						8	35.10	44.10		10	48.10	59.80		10	48.10	59.80		
30	4	8.50	11.50		36	4	11.50	15.45		44	6	22.20	28.20		10	39.00	48.60		12	53.80	66.20		12	53.80	66.20
	5	9.80	12.85		5	13.30																			



### Prices, Finished Pulleys, Fig. 2442.

**Bored, turned, balanced, with set screws or key ways.**

Single Bolt.				Double Bolt.				Single Bolt.				Double Bolt.				Single Bolt.				Double Bolt.																																																																																																																																																																																																																														
Diam. Ins.	Width Face. Ins.	Single Bolt. Each.	Double Bolt. Each.	Diam. Ins.	Width Face. Ins.	Single Bolt. Each.	Double Bolt. Each.	Diam. Ins.	Width Face. Ins.	Single Bolt. Each.	Double Bolt. Each.	Diam. Ins.	Width Face. Ins.	Single Bolt. Each.	Double Bolt. Each.	Diam. Ins.	Width Face. Ins.	Single Bolt. Each.	Double Bolt. Each.	Diam. Ins.	Width Face. Ins.	Single Bolt. Each.	Double Bolt. Each.																																																																																																																																																																																																																											
60	16	\$70.30	\$85.90	64	20	\$ 97.80	\$115.80	68	24	\$132.80	\$166.40	72	28	\$175.20	\$225.00	90	24	\$192.00	\$236.40																																																																																																																																																																																																																															
	18	78.80	95.00		20	88.90	105.70		22	100.00	122.80		24	111.80	141.50		26	120.00	162.60	30	141.00	184.20	61	6	40.70	51.80	65	6	45.80	58.10	69	6	51.00	64.50	75	10	71.20	87.40	96	12		149.60	8	46.00	57.70	10	50.80	63.10	12	56.80	69.70	14	63.50	77.00	16	72.00	87.90	18	80.70	97.20	62	6	42.00	53.40	66	6	47.10	59.70	70	6	52.40	66.20	76	10	73.10	89.90	102	12		165.60	8	47.30	59.30	10	52.10	64.70	12	58.30	71.50	14	65.20	79.00	16	74.00	90.20	18	82.90	99.70	63	6	43.20	54.90	67	6	48.40	61.30	71	6	53.80	67.90	78	10	76.60	94.00	108	12		181.60	8	48.60	60.90	10	53.50	66.40	12	59.80	73.30	14	66.80	80.90	16	75.90	92.40	18	85.10	102.20	64	6	44.50	56.50	68	6	49.70	62.90	72	6	55.30	69.70	84	10	89.10	108.90	114	12		197.60	8	50.00	62.60	10	54.90	68.10	12	61.40	75.20	14	68.40	82.80	16	77.80	94.60	18	87.30	104.70																																																																				
	20	88.90	105.70		22	100.00	122.80		24	111.80	141.50		26	120.00	162.60		30	141.00	184.20	61	6	40.70		51.80	65	6		45.80	58.10	69		6	51.00	64.50		75	10	71.20		87.40	96	12		149.60	8	46.00	57.70	10	50.80	63.10	12	56.80	69.70	14	63.50	77.00	16	72.00	87.90	18		80.70	97.20	62		6	42.00	53.40		66	6	47.10		59.70	70	6		52.40	66.20	76	10	73.10	89.90	102	12		165.60	8	47.30	59.30	10	52.10	64.70	12	58.30	71.50	14	65.20		79.00	16	74.00		90.20	18	82.90		99.70	63	6		43.20	54.90	67		6	48.40	61.30	71	6	53.80	67.90	78	10	76.60	94.00	108	12		181.60	8	48.60	60.90	10	53.50	66.40		12	59.80	73.30		14	66.80	80.90		16	75.90	92.40		18	85.10	102.20		64	6	44.50	56.50	68	6	49.70	62.90	72	6	55.30	69.70	84	10	89.10	108.90	114	12		197.60	8	50.00	62.60	10	54.90	68.10	12	61.40	75.20	14	68.40	82.80	16	77.80	94.60	18	87.30	104.70																																																			
	22	100.00	122.80		24	111.80	141.50		26	120.00	162.60		30	141.00	184.20		61	6	40.70		51.80	65		6		45.80		58.10	69			6	51.00	64.50			75	10		71.20		87.40	96	12		149.60	8	46.00	57.70	10	50.80	63.10	12	56.80	69.70	14	63.50	77.00	16	72.00		87.90	18			80.70	97.20	62			6	42.00		53.40		66		6	47.10		59.70	70	6		52.40	66.20	76	10	73.10	89.90	102	12		165.60	8	47.30	59.30	10		52.10	64.70	12		58.30	71.50	14		65.20		79.00		16	74.00			90.20	18	82.90		99.70	63	6		43.20	54.90	67		6	48.40	61.30	71	6	53.80	67.90	78	10		76.60	94.00	108		12		181.60		8	48.60	60.90		10	53.50	66.40			12	59.80	73.30		14	66.80	80.90		16	75.90	92.40		18	85.10	102.20		64	6	44.50	56.50	68	6	49.70	62.90	72	6	55.30	69.70	84	10	89.10	108.90	114	12		197.60	8	50.00	62.60	10	54.90	68.10	12	61.40	75.20	14	68.40	82.80	16	77.80	94.60	18	87.30	104.70																																		
	24	111.80	141.50		26	120.00	162.60		30	141.00	184.20		61	6	40.70			51.80	65		6			45.80		58.10		69				6	51.00	64.50				75		10		71.20		87.40	96	12		149.60	8	46.00	57.70	10	50.80	63.10	12	56.80	69.70	14	63.50	77.00		16	72.00			87.90	18				80.70	97.20		62				6	42.00		53.40		66		6	47.10		59.70	70	6		52.40	66.20	76	10	73.10	89.90	102		12		165.60		8	47.30	59.30		10		52.10		64.70	12			58.30	71.50	14		65.20		79.00		16	74.00			90.20	18	82.90		99.70	63	6		43.20		54.90	67			6	48.40	61.30		71	6	53.80		67.90	78	10			76.60	94.00	108		12		181.60		8	48.60	60.90		10	53.50	66.40			12	59.80	73.30		14	66.80	80.90		16	75.90	92.40		18	85.10	102.20		64	6	44.50	56.50	68	6	49.70	62.90	72	6	55.30	69.70	84	10	89.10	108.90	114	12		197.60	8	50.00	62.60	10	54.90	68.10	12	61.40	75.20	14	68.40	82.80	16	77.80	94.60	18	87.30	104.70																	
	26	120.00	162.60		30	141.00	184.20		61	6	40.70			51.80	65			6			45.80			58.10		69						6	51.00	64.50						75		10		71.20		87.40	96	12		149.60	8	46.00	57.70	10	50.80	63.10	12	56.80	69.70	14		63.50	77.00			16	72.00				87.90	18						80.70	97.20		62				6	42.00		53.40		66		6	47.10		59.70	70	6			52.40	66.20	76		10	73.10	89.90		102		12			165.60			8	47.30	59.30		10		52.10		64.70	12			58.30	71.50	14		65.20		79.00		16		74.00				90.20	18	82.90			99.70	63		6		43.20			54.90	67			6	48.40	61.30		71	6	53.80		67.90	78	10			76.60	94.00	108		12		181.60		8	48.60	60.90		10	53.50	66.40			12	59.80	73.30		14	66.80	80.90		16	75.90	92.40		18	85.10	102.20		64	6	44.50	56.50	68	6	49.70	62.90	72	6	55.30	69.70	84	10	89.10	108.90	114	12		197.60	8	50.00	62.60	10	54.90	68.10	12	61.40	75.20	14	68.40	82.80	16	77.80	94.60	18	87.30	104.70
	30	141.00	184.20																																																																																																																																																																																																																																															
61	6	40.70	51.80	65	6	45.80	58.10	69		6	51.00	64.50		75		10		71.20			87.40			96								12		149.60																																																																																																																																																																																																																
	8	46.00	57.70		10	50.80	63.10			12	56.80	69.70				14		63.50			77.00		16				72.00				87.90	18	80.70	97.20	62				6			42.00		53.40		66		6	47.10	59.70	70	6	52.40	66.20	76	10	73.10	89.90	102	12		165.60	8		47.30	59.30	10		52.10		64.70	12	58.30				71.50	14	65.20						79.00	16		74.00				90.20	18		82.90		99.70		63	6	43.20		54.90	67	6	48.40	61.30			71	6	53.80	67.90		78	10	76.60	94.00		108		12			181.60			8	48.60	60.90		10		53.50		66.40	12	59.80			73.30	14	66.80	80.90	16		75.90		92.40	18		85.10	102.20		64				6	44.50	56.50			68	6		49.70		62.90			72	6			55.30	69.70	84		10	89.10	108.90		114	12				197.60	8	50.00		62.60	10	54.90		68.10	12	61.40		75.20	14	68.40			82.80	16	77.80		94.60	18	87.30		104.70																												
	10	50.80	63.10		12	56.80	69.70			14	63.50	77.00				16		72.00		87.90	18		80.70		97.20		62			6	42.00	53.40	66	6		47.10			59.70		70	6		52.40				66.20	76	10		73.10	89.90	102		12		165.60		8	47.30	59.30	10	52.10	64.70	12	58.30		71.50	14	65.20	79.00	16		74.00		90.20	18	82.90	99.70				63	6	43.20		54.90				67	6		48.40		61.30			71	6		53.80		67.90	78	10		76.60		94.00	108	12			181.60	8	48.60	60.90			10	53.50	66.40	12		59.80	73.30	14	66.80		80.90		16		75.90	92.40	18			85.10	102.20	64	6	44.50		56.50		68	6		49.70	62.90	72				6	55.30	69.70	84	10			89.10	108.90	114		12				197.60			8	50.00			62.60	10	54.90			68.10	12			61.40	75.20	14		68.40	82.80	16		77.80	94.60	18		87.30	104.70																																								
	12	56.80	69.70		14	63.50	77.00			16	72.00	87.90				18	80.70	97.20		62	6	42.00	53.40		66				6	47.10	59.70	70		6		52.40	66.20		76			10	73.10	89.90				102		12			165.60			8	47.30	59.30		10	52.10	64.70	12	58.30	71.50	14	65.20	79.00	16	74.00	90.20	18	82.90		99.70	63	6	43.20	54.90	67		6			48.40	61.30	71	6			53.80		67.90		78		10				76.60		94.00		108		12				181.60		8	48.60		60.90	10	53.50	66.40		12	59.80	73.30	14	66.80	80.90	16	75.90	92.40	18	85.10	102.20		64	6	44.50	56.50	68		6	49.70	62.90		72	6		55.30			69.70		84	10					89.10	108.90	114		12				197.60			8	50.00	62.60		10		54.90	68.10	12		61.40	75.20	14	68.40	82.80		16	77.80	94.60		18	87.30	104.70																																																			
	14	63.50	77.00		16	72.00	87.90			18	80.70	97.20	62			6	42.00	53.40	66		6	47.10	59.70					70	6	52.40	66.20			76		10	73.10	89.90				102	12		165.60					8		47.30	59.30			10	52.10	64.70		12	58.30	71.50	14	65.20	79.00	16	74.00	90.20	18	82.90	99.70	63	6	43.20	54.90		67	6	48.40			61.30	71		6	53.80		67.90	78		10		76.60	94.00			108	12					181.60				8		48.60		60.90		10	53.50		66.40	12	59.80	73.30		14	66.80	80.90	16	75.90	92.40	18	85.10	102.20	64	6	44.50	56.50		68	6	49.70		62.90	72	6	55.30			69.70	84	10			89.10	108.90		114				12		197.60			8			50.00	62.60			10	54.90	68.10		12		61.40	75.20	14		68.40	82.80	16	77.80	94.60		18	87.30	104.70																																																							
	16	72.00	87.90		18	80.70	97.20		62	6	42.00	53.40			66	6	47.10	59.70			70	6	52.40			66.20			76	10	73.10					89.90	102	12					165.60	8	47.30		59.30			10		52.10	64.70			12	58.30	71.50		14	65.20	79.00	16	74.00	90.20	18	82.90	99.70	63	6	43.20		54.90	67	6			48.40	61.30		71	6			53.80	67.90		78		10	76.60		94.00	108		12					181.60	8	48.60				60.90	10	53.50		66.40		12	59.80		73.30	14	66.80	80.90		16	75.90	92.40	18	85.10	102.20	64	6	44.50		56.50	68	6			49.70	62.90		72		6	55.30			69.70		84	10		89.10	108.90					114	12		197.60			8	50.00		62.60	10		54.90	68.10	12	61.40		75.20	14	68.40	82.80	16		77.80	94.60	18	87.30	104.70																																																											
	18	80.70	97.20																																																																																																																																																																																																																																															
62	6	42.00	53.40	66	6	47.10	59.70	70		6	52.40	66.20		76		10	73.10	89.90				102	12			165.60																																																																																																																																																																																																																								
	8	47.30	59.30		10	52.10	64.70			12	58.30	71.50				14	65.20	79.00					16	74.00		90.20				18	82.90				99.70	63		6		43.20			54.90	67	6	48.40	61.30			71	6	53.80	67.90		78	10	76.60	94.00	108	12		181.60	8	48.60	60.90	10	53.50	66.40		12	59.80		73.30		14			66.80	80.90			16			75.90	92.40				18	85.10		102.20			64		6	44.50		56.50	68	6	49.70			62.90	72	6	55.30	69.70		84	10	89.10	108.90	114	12		197.60	8	50.00	62.60	10	54.90	68.10		12	61.40		75.20		14			68.40	82.80				16	77.80			94.60			18		87.30	104.70																																																																																											
	10	52.10	64.70		12	58.30	71.50			14	65.20	79.00				16	74.00	90.20					18	82.90		99.70	63			6	43.20		54.90		67			6		48.40	61.30		71		6	53.80	67.90		78		10	76.60	94.00	108		12		181.60		8	48.60	60.90	10	53.50	66.40	12	59.80	73.30		14	66.80		80.90		16			75.90	92.40			18		85.10	102.20	64				6	44.50	56.50	68					6	49.70	62.90	72		6	55.30		69.70	84		10	89.10	108.90	114		12		197.60		8	50.00	62.60	10	54.90	68.10	12	61.40	75.20		14	68.40		82.80		16			77.80	94.60				18	87.30	104.70																																																																																																			
	12	58.30	71.50		14	65.20	79.00			16	74.00	90.20				18	82.90	99.70		63			6	43.20	54.90	67				6	48.40	61.30	71					6	53.80	67.90	78				10	76.60	94.00	108			12		181.60			8	48.60	60.90		10	53.50	66.40	12	59.80	73.30	14	66.80	80.90		16	75.90		92.40		18	85.10		102.20	64	6		44.50		56.50	68		6			49.70	62.90	72			6			55.30	69.70	84			10	89.10	108.90	114			12		197.60			8	50.00	62.60		10	54.90	68.10	12	61.40	75.20	14	68.40	82.80		16	77.80		94.60		18	87.30		104.70																																																																																																										
	14	65.20	79.00		16	74.00	90.20			18	82.90	99.70	63			6	43.20	54.90	67				6	48.40	61.30			71		6	53.80	67.90		78				10	76.60	94.00		108			12		181.60				8	48.60	60.90			10	53.50	66.40		12	59.80	73.30	14	66.80	80.90	16	75.90	92.40		18	85.10	102.20	64		6	44.50	56.50	68		6		49.70	62.90	72			6		55.30	69.70	84				10		89.10	108.90	114				12		197.60				8	50.00	62.60			10	54.90	68.10		12	61.40	75.20	14	68.40	82.80	16	77.80	94.60		18	87.30	104.70																																																																																																																
	16	74.00	90.20		18	82.90	99.70		63	6	43.20	54.90			67	6	48.40	61.30			71		6	53.80	67.90				78	10	76.60	94.00					108	12		181.60					8	48.60	60.90				10	53.50	66.40			12	59.80	73.30		14	66.80	80.90	16	75.90	92.40	18	85.10	102.20	64	6	44.50	56.50		68	6	49.70	62.90			72	6	55.30	69.70				84	10	89.10	108.90				114	12			197.60					8	50.00	62.60				10	54.90	68.10			12	61.40	75.20		14	68.40	82.80	16	77.80	94.60	18	87.30	104.70																																																																																																																				
	18	82.90	99.70																																																																																																																																																																																																																																															
63	6	43.20	54.90	67	6	48.40	61.30	71		6	53.80	67.90		78		10	76.60	94.00				108	12		181.60																																																																																																																																																																																																																									
	8	48.60	60.90		10	53.50	66.40			12	59.80	73.30				14	66.80	80.90					16	75.90	92.40					18	85.10	102.20				64		6	44.50	56.50				68	6	49.70	62.90			72	6	55.30	69.70		84	10	89.10	108.90	114	12		197.60	8	50.00	62.60	10	54.90	68.10		12	61.40	75.20			14	68.40	82.80				16	77.80	94.60					18	87.30	104.70																																																																																																																																																								
	10	53.50	66.40		12	59.80	73.30			14	66.80	80.90				16	75.90	92.40					18	85.10	102.20		64			6	44.50	56.50			68			6	49.70	62.90			72		6	55.30	69.70		84		10	89.10	108.90	114		12		197.60		8	50.00	62.60	10	54.90	68.10	12	61.40	75.20		14	68.40	82.80			16	77.80	94.60				18	87.30	104.70																																																																																																																																																															
	12	59.80	73.30		14	66.80	80.90			16	75.90	92.40				18	85.10	102.20		64			6	44.50	56.50	68				6	49.70	62.90	72					6	55.30	69.70	84				10	89.10	108.90	114			12		197.60			8	50.00	62.60		10	54.90	68.10	12	61.40	75.20	14	68.40	82.80		16	77.80	94.60			18	87.30	104.70																																																																																																																																																																					
	14	66.80	80.90		16	75.90	92.40			18	85.10	102.20	64			6	44.50	56.50	68				6	49.70	62.90			72		6	55.30	69.70		84				10	89.10	108.90		114			12		197.60				8	50.00	62.60			10	54.90	68.10		12	61.40	75.20	14	68.40	82.80	16	77.80	94.60		18	87.30	104.70																																																																																																																																																																										
	16	75.90	92.40		18	85.10	102.20		64	6	44.50	56.50			68	6	49.70	62.90			72		6	55.30	69.70				84	10	89.10	108.90					114	12		197.60					8	50.00	62.60				10	54.90	68.10			12	61.40	75.20		14	68.40	82.80	16	77.80	94.60	18	87.30	104.70																																																																																																																																																																														
	18	85.10	102.20																																																																																																																																																																																																																																															
64	6	44.50	56.50	68	6	49.70	62.90	72		6	55.30	69.70		84		10	89.10	108.90				114	12		197.60																																																																																																																																																																																																																									
	8	50.00	62.60		10	54.90	68.10			12	61.40	75.20				14	68.40	82.80					16	77.80	94.60					18	87.30	104.70																																																																																																																																																																																																																		
	10	54.90	68.10		12	61.40	75.20			14	68.40	82.80				16	77.80	94.60					18	87.30	104.70																																																																																																																																																																																																																									
	12	61.40	75.20		14	68.40	82.80			16	77.80	94.60				18	87.30	104.70																																																																																																																																																																																																																																
	14	68.40	82.80		16	77.80	94.60			18	87.30	104.70																																																																																																																																																																																																																																						
	16	77.80	94.60		18	87.30	104.70																																																																																																																																																																																																																																											
	18	87.30	104.70																																																																																																																																																																																																																																															

Bored, turned, balanced, with set screws or key ways. Add to lists of Solid Pulleys, as given on pages 302, 303 and 304.

[illegible]

6 to 72 inches in diameter with special long hubs.

**Prices on application.**

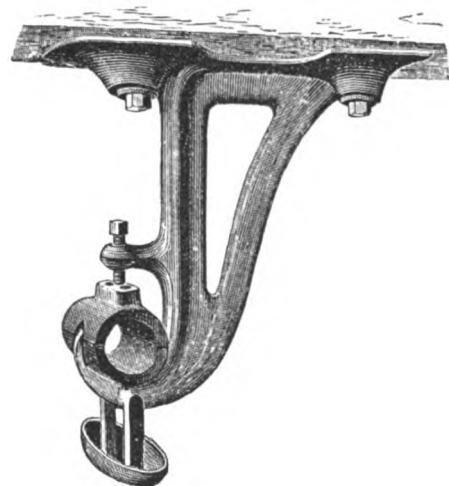
6 to 120 inches in diameter, same widths as balanced pulleys, Fig. 2442.

Prices on application.

6 to 72 inches in diameter, with either 1, 2 or 3 flanges, as desired.

**Prices on application.**

### PLAIN HANGER.



**Fig. 2445.**

**Fig. 2446.**

Are all made with Babbitted bearings, bored and  
faced off.

All of the Adjustable Hangers are so constructed that the shaft can be laid in after the hanger-frame is put up, and lines of shafting can be taken out of the boxes without removing the hanger frames. This is a labor and time saving feature of great advantage to consumers and millwrights.

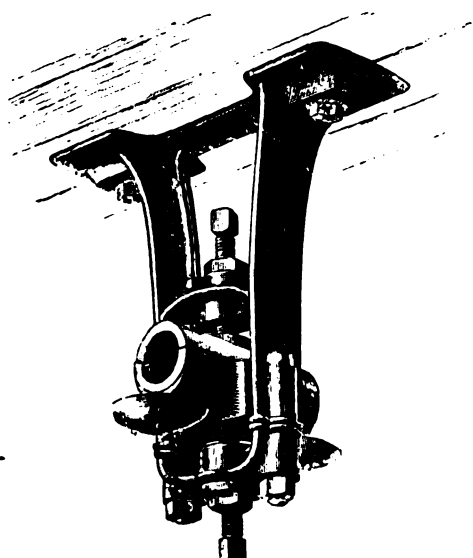
Every bearing is lined with a tested grade of Babbitt metal.

Diam. Shaft, ins.	$\frac{1}{4}$ "	$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"	1 $\frac{1}{4}$ "	1 $\frac{1}{2}$ "	2"	2 $\frac{1}{2}$ "	3"
6 in. Drop, \$1.50	2.00								
9 "	2.25	2.50	2.75	3.50	4.50				
12 "	2.50	2.75	3.00	4.00	5.00	5.75	6.50		
15 "		3.00	3.25	4.50	5.50	6.25	7.25	9.75	
18 "				5.00	6.00	6.75	8.00	10.50	
21 "						7.25	8.75	11.25	

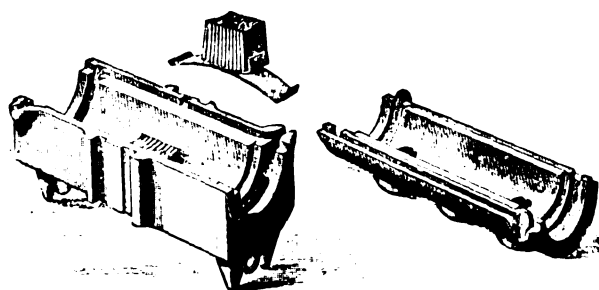
Diameter	Shaft, inches,	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	2 $\frac{1}{8}$	2 $\frac{3}{8}$
9 inch distance from post,		\$2 75	3.50	4.50		
12 " " " "		3 00	4.00	5.00	5 75	6.50
15 " " " "		3.25	4.50	5.50	6.25	7.25
18 " " " "					6.75	8.00

Special Hangers of any pattern or size made to order.  
Shifter Arms for Hangers from 50 cents to \$1.00 extra.

**PATENT  
SELF-OILING ARRANGEMENT.**



**Fig. 2448.**

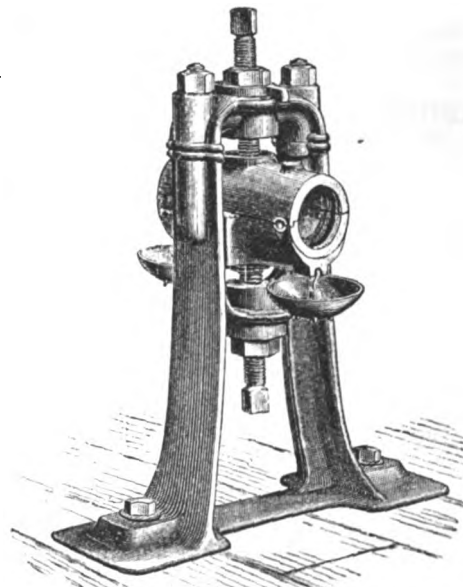


**Fig. 2447.**

This Self-Oiler has been thoroughly tested. The arrangement is very simple and effective, and its main advantage consists in drawing pure liquid oil towards the shaft, while all impure residue will remain at the bottom of the oil chamber.

The oiler cannot possibly get out of order, and when the oil chamber is once filled the oiler will do its work for a year or longer without any attendance.

### DOUBLE BRACED ADJUSTABLE FLOOR STAND.



**Fig. 2449.**

**Prices, Adjustable Hangers and Floor Stands, Figs. 2448 and 2449, With Patent Self-Oiling Arrangement.**

Diam. Shaft, Ins.	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{8}$	$1\frac{1}{2}$	$2\frac{1}{8}$	$2\frac{1}{2}$	$3\frac{1}{8}$	$3\frac{1}{2}$	$4\frac{1}{8}$	$4\frac{1}{2}$
6 inch Drop.....	\$2.25	3.00	3.75	4.50	5.25	6.00	6.75	7.50	8.25	9.00	9.75	10.50
7 " " " " " "	2.50	3.25	4.00	4.75	5.50	6.25	7.00	7.75	8.50	9.25	10.00	10.75
8 " " " " " "	2.75	3.50	4.25	5.00	5.75	6.50	7.25	8.00	8.75	9.50	10.25	11.00
12 " " " " " "	3.50	4.25	5.00	5.75	6.50	7.25	8.00	8.75	9.50	10.25	11.00	11.75
16 " " " " " "	4.00	4.75	5.50	6.25	7.00	7.75	8.50	9.25	10.00	10.75	11.50	12.25
18 " " " " " "	4.25	5.00	5.75	6.50	7.25	8.00	8.75	9.50	10.25	11.00	11.75	12.50

**Prices, Adjustable Hangers and Floor Stands, Figs. 2448 and 2449, Without Patent Self-Oiling Arrangement.**

[illegible]

**Shifter Arms from 50 cents to \$1.00 extra.**

**HANGERS, WALL BOXES, ETC.**

**LOW DROP ADJUSTABLE HANGER.      ADJUSTABLE POST HANGER.      PATENT ADJUSTABLE PILLOW BLOCK.**

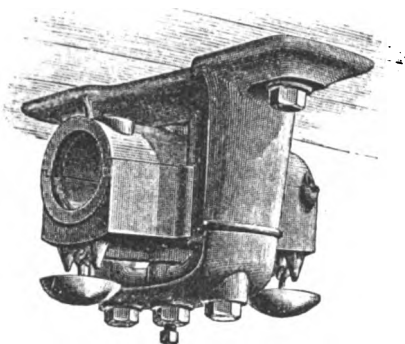


Fig. 2450.

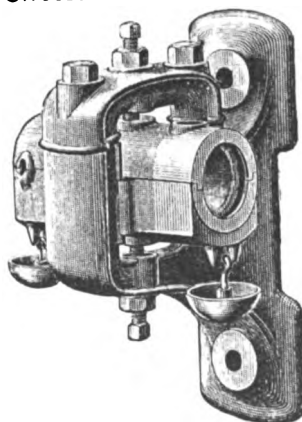


Fig. 2451.

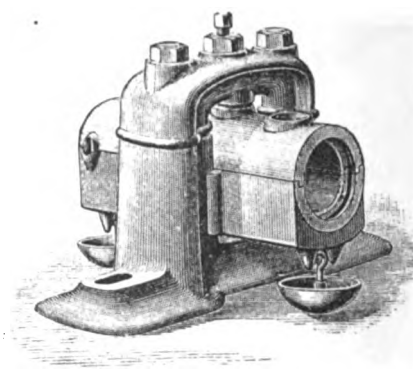


Fig. 2452.

**Prices, Adjustable Hangers and Pillow Blocks.**  
**Figs. 2450 and 2452.**

With patent self-oiling arrangement.

Diam. shaft, inches..	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$2\frac{1}{8}$	$2\frac{1}{4}$
Each .....	\$2.50	3.00	3.50	4.00	4.50	5.50	7.00	8.50
Diam. shaft, inches..	$2\frac{1}{8}$	$2\frac{1}{4}$	$3\frac{1}{8}$	$3\frac{1}{4}$	$4\frac{1}{8}$	$4\frac{1}{4}$	$5\frac{1}{8}$	$5\frac{1}{4}$
Each .....	\$10.50	12.50	19.00	28.00	36.00	46.00	56.00	70.00

**Prices, Adjustable Hangers and Pillow Blocks.**  
**Figs. 2450 and 2452.**

Without patent self-oiling arrangement.

Diam. shaft, inches..	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$2\frac{1}{8}$	$2\frac{1}{4}$
Each .....	\$2.40	2.85	3.30	3.80	4.25	5.00	6.50	8.00
Diam. shaft, inches..	$2\frac{1}{8}$	$2\frac{1}{4}$	$3\frac{1}{8}$	$3\frac{1}{4}$	$4\frac{1}{8}$	$4\frac{1}{4}$	$5\frac{1}{8}$	$5\frac{1}{4}$
Each .....	\$9.75	11.50	17.00	24.50	33.50	43.00	52.00	65.00

**Prices, Adjustable Post Hangers.**  
**Fig. 2451.**

With patent self-oiling arrangement.

Diam. shaft, inches..	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$2\frac{1}{8}$	$2\frac{1}{4}$
Each .....	\$2.50	3.00	3.50	4.25	5.00	6.00	7.75	9.25
Diam. shaft, inches..	$2\frac{1}{8}$	$2\frac{1}{4}$	$3\frac{1}{8}$	$3\frac{1}{4}$	$4\frac{1}{8}$	$4\frac{1}{4}$	$5\frac{1}{8}$	$5\frac{1}{4}$
Each .....	\$12.50	14.50	21.50	32.50	45.00	55.00	72.00	82.00

**Prices, Adjustable Post Hangers.**  
**Fig. 2451.**

Without patent self-oiling arrangement.

Diam. shaft, inches..	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$2\frac{1}{8}$	$2\frac{1}{4}$
Each .....	\$2.40	2.85	3.30	4.00	4.75	5.50	7.25	8.75
Diam. shaft, inches..	$2\frac{1}{8}$	$2\frac{1}{4}$	$3\frac{1}{8}$	$3\frac{1}{4}$	$4\frac{1}{8}$	$4\frac{1}{4}$	$5\frac{1}{8}$	$5\frac{1}{4}$
Each .....	\$11.75	13.50	19.50	30.00	42.50	52.00	68.00	77.00

**JOURNAL BOX OR RIGID**  
**PILLOW BLOCK.**

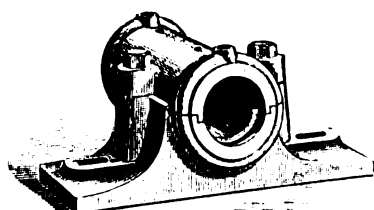


Fig. 2453.

**WALL FRAME FOR PILLOW BLOCK.**

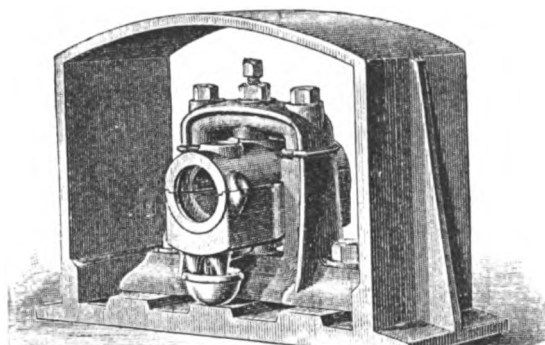


Fig. 2454.

**FLANGED FACE COUPLING, WITH**  
**BOLTS FITTED**  
**AND KEYED TO SHAFT.**

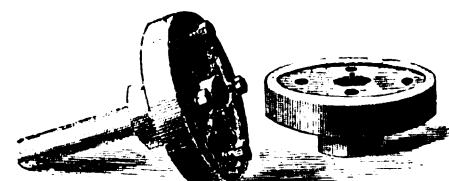


Fig. 2455.

**Prices, Journal Boxes, Fig. 2453.**

Diam. shaft, inches...	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$2\frac{1}{8}$	$2\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$3\frac{1}{8}$	$3\frac{1}{4}$	$3\frac{3}{8}$	$4\frac{1}{8}$	$4\frac{1}{4}$	$5\frac{1}{8}$	$5\frac{1}{4}$
Each .....	\$2.25	2.75	3.00	3.25	3.75	5.00	6.25	7.50	9.00	11.25	13.00	16.00	17.50	20.00	28.75	36.50	44.75

**Prices, Wall Frames for Pillow Blocks, Fig. 2454.**

Diameter shaft, inches.....	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$2\frac{1}{8}$	$2\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$3\frac{1}{8}$	$3\frac{1}{4}$	$4\frac{1}{8}$	$4\frac{1}{4}$	$5\frac{1}{8}$	$5\frac{1}{4}$
Width of frame, " .....	6	6	6	6	7 $\frac{1}{2}$	7 $\frac{1}{2}$	9	10	12	12	12	16	16
Each .....	\$4.25	4.75	5.25	6.00	7.00	8.50	10.25	13.60	19.35	28.25	37.20	44.00	50.80

Prices given above are for Frame only, without Pillow Block.

**Prices, Sole Plates for Pillow Blocks.**

Including bolts for securing Pillow Blocks to Sole Plates, but without foundation bolts.

Diameter shaft, inches.....	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$2\frac{1}{8}$	$2\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$3\frac{1}{8}$	$3\frac{1}{4}$	$4\frac{1}{8}$	$4\frac{1}{4}$	$5\frac{1}{8}$	$5\frac{1}{4}$
Length, inches.....	17	20 $\frac{1}{2}$	20 $\frac{1}{2}$	24	24	28	28	32	35	38	42	46	49
Width, " .....	4	4 $\frac{1}{2}$	4 $\frac{1}{2}$	6	6	7	7	8	9	10	11	12	12 $\frac{1}{2}$
Thickness, " .....	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$2\frac{1}{8}$	$2\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$2\frac{3}{8}$	$2\frac{1}{2}$	3	$3\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{2}$
Diameter foundation bolts, inches.....	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	1	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{3}{4}$
Each .....	\$2.30	2.60	2.60	3.50	3.50	5.00	5.00	6.20	9.40	11.50	14.50	16.30	21.50

**Prices, Flanged Face Couplings, with Bolts, Fig. 2455.**

Diameter shaft, inches.....	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$2\frac{1}{8}$	$2\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$3\frac{1}{8}$	$3\frac{1}{4}$	$4\frac{1}{8}$	$4\frac{1}{4}$	$5\frac{1}{8}$	$5\frac{1}{4}$
Fitted to shaft.....per pair, \$6.50	6.75	7.00	7.25	7.50	9.00	10.50	12.50	15.50	18.50	25.00	32.50	42.00	53.50	63.50	77.00	
Not fitted to shaft.....	3.50	3.75	4.00	4.25	4.50	6.00	7.00	8.50	11.00	13.50	18.00	24.00	33.00	43.00	50.00	60.00

# COUPLINGS AND PATENT PULLEY STAND.

## ANGLE COUPLINGS.

Double.

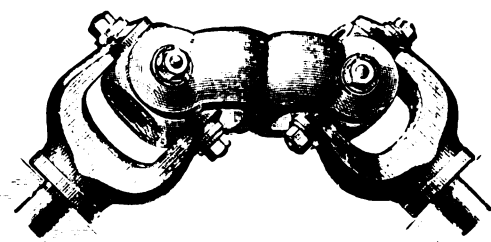


Fig. 2456.

Warranted to work up to an angle of 70 degrees.

Single.

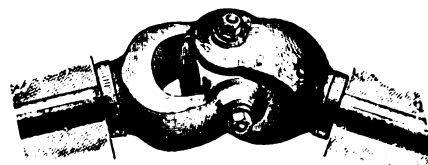


Fig. 2457.

Warranted to work up to an angle of 25 degrees.

### Prices, Angle Couplings, Figs. 2456 and 2457.

Diameter shaft, inches.....	1 7/8 or 1 1/2	1 1/2 or 2	2 3/8 or 2 1/2	2 1/2 or 2 3/8	2 3/8 or 2 1/2	2 1/2 or 2 3/8	2 3/8 or 3	3 1/8 or 3 1/2	3 1/2 or 4	4 1/8 or 4 1/2	4 1/2 or 5
Double Couplings, each.....	\$90.00	100.00	110.00	120.00	125.00	135.00	180.00	240.00	300.00	385.00	
Single " ".....	50.00	55.00	60.00	65.00	70.00	75.00	100.00	135.00	170.00	215.00	

## PATENT INTERNAL CLAMP COUPLING.

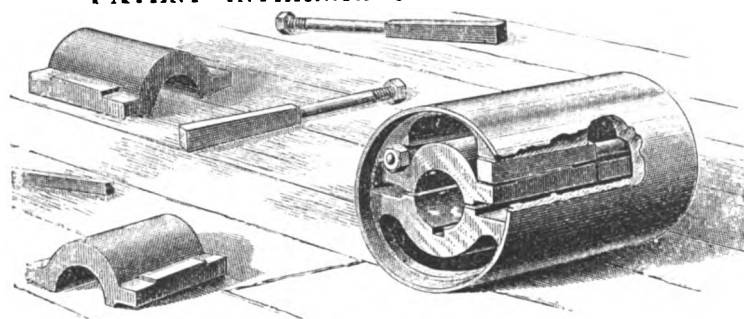


Fig. 2458.

## JAW CLUTCH COUPLING.

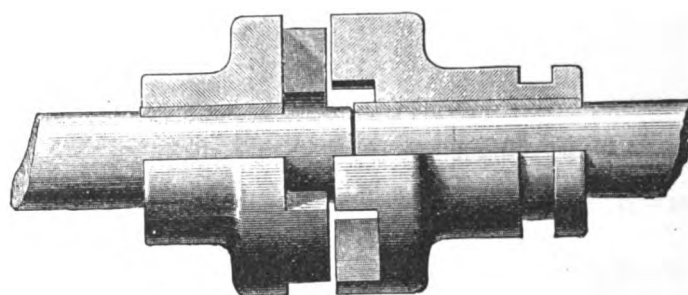


Fig. 2459.

### Prices, Patent Internal Clamp Couplings, Fig. 2458.

Diameter shaft, inches.....	1 1/8	1 3/8	1 5/8	1 7/8	1 1/2	1 3/4	2 1/8	2 3/8	2 1/2	2 3/4	3 1/8	3 1/2	4 1/8	4 1/2	5 1/8	5 1/2
Complete, as per cut.....each, \$4 25	4.75	5.25	5.75	6.50	8.25	10.00	12.00	14.75	17.50	24.00	32.00	41.75	53.25	65.00	76.50	

### Prices, Jaw Clutch Couplings, Fig. 2459.

Diameter shaft, inches.....	1 1/8	1 3/8	1 5/8	1 7/8	1 1/2	1 3/4	2 1/8	2 3/8	2 1/2	2 3/4	3 1/8	3 1/2	4 1/8	4 1/2	5 1/8	5 1/2
Fitted to shaft, per pair.....	\$9.50	10.00	11.00	12.00	12.75	13.50	15.75	18.75	23.25	27.75	37.50	48.75				
Not fitted to shaft, ".....	6.50	7.00	7.50	8.00	8.50	9.00	11.25	14.25	18.50	22.75	30.00	39.00				

## PATENT PULLEY STAND.

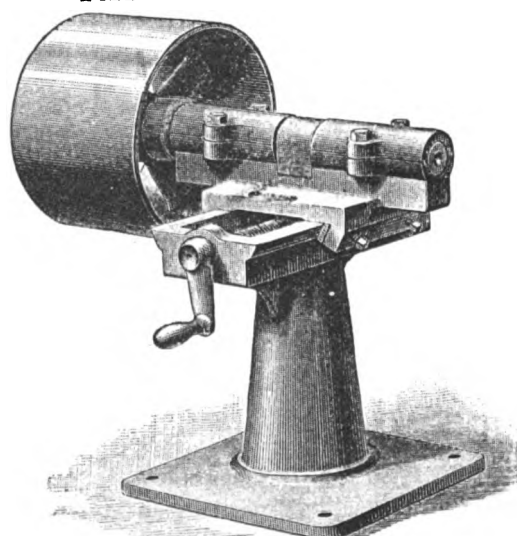


Fig. 2460.

This contrivance is a substitute for loose pulleys in such cases where the driven pulley of the machine is fastened to the end of the shaft (over hanging), as, for instance, on electro-dynamo machines, etc.

## PATENT PULLEY STAND, TOP VIEW.

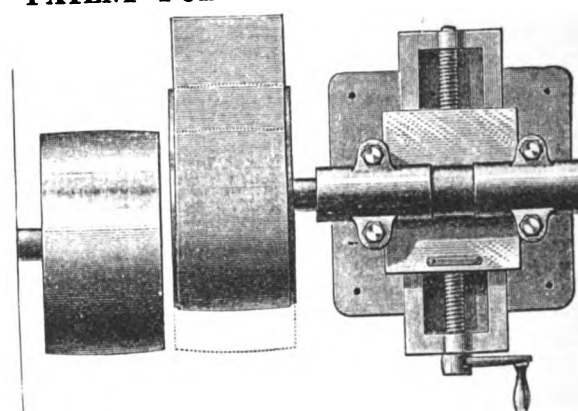


Fig. 2461.

The pulley on stand is a tight pulley, fastened to a shaft, which is freely revolving in self-oiling bearings. Instead of shifting the belt from the driven to a loose pulley it is shifted on to the pulley of the patent pulley stand, and by means of a movable slide operated by a hand crank, as shown in cut, the belt is slackened to any desired extent, thus relieving same entirely while machine is idle. In ordering state the exact diameter and width of face of the driven pulley and distance from the center of its shaft to the floor.

### Prices.

For belts, inches.....	4	5	6	8	10	12
Each.....	\$70.00	72.50	75.00	85.00	100.00	125.00

## COUNTERSHAFT, MULE STANDS, ETC.

### COUNTERSHAFT.

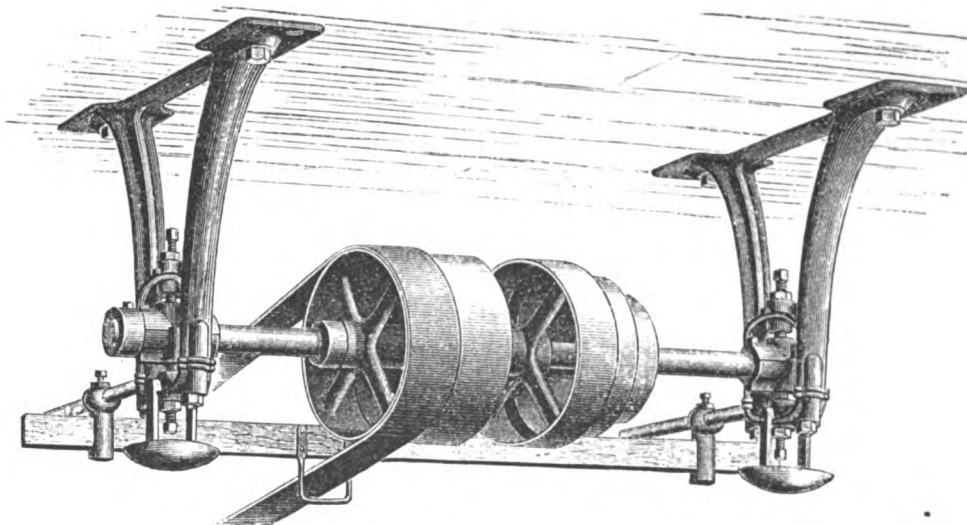


Fig. 2462.

Countershafts for any size of belt, with adjustable or plain hangers, furnished at low rates.

Prices on application.

### STATIONARY MULE STAND.

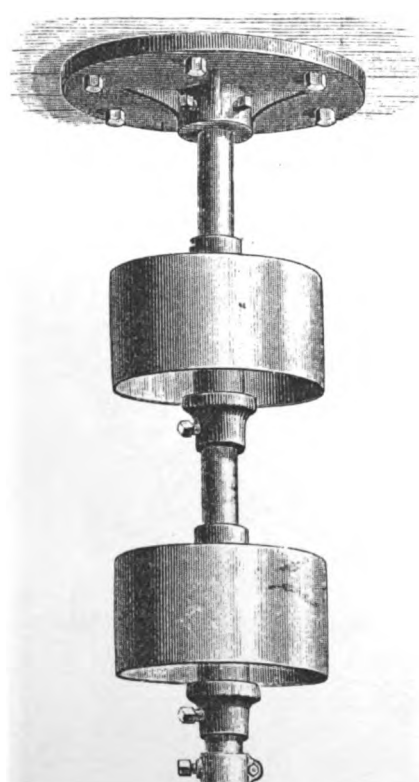


Fig. 2463.

### ADJUSTABLE MULE PULLEY STAND.

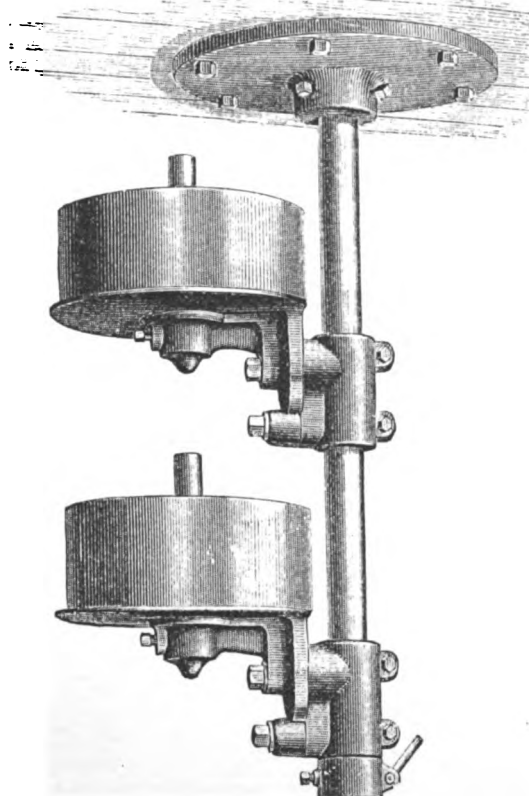


Fig. 2464.

### ADJUSTABLE BINDER FRAME.

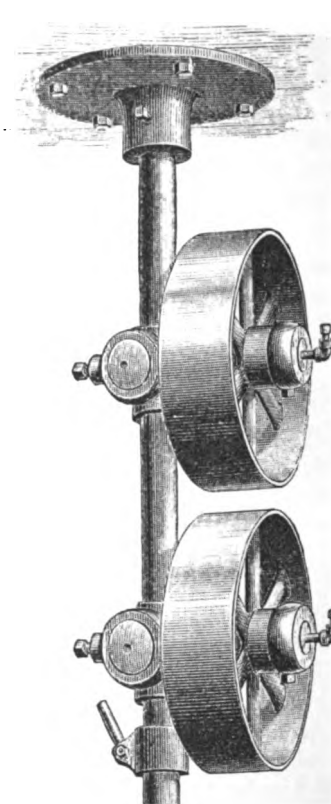


Fig. 2465.

#### Prices, with Two Pulleys.

For Belt.	Sizes of Pulleys.	Each.
2 inches	10 ins. x 3 ins.	\$22.50
3 "	10 " x 4 "	25.00
4 "	12 " x 5 "	30.00
5 "	12 " x 6 "	32.00
6 "	16 " x 7 "	37.50
7 "	16 " x 8 "	40.00
8 "	21 " x 10 "	45.00
10 "	21 " x 12 "	55.00
12 "	30 " x 14 "	65.00

#### Prices, with Two Pulleys.

Adjustable in every direction.

For Belt.	Sizes of Pulleys.	Each.
4 inches	12 ins. x 5 ins.	\$60.00
5 "	12 " x 6 "	62.00
6 "	16 " x 7 "	65.00
7 "	16 " x 8 "	68.00
8 "	21 " x 10 "	72.00
10 "	24 " x 12 "	75.00
12 "	30 " x 14 "	100.00

#### Prices, with Two Pulleys.

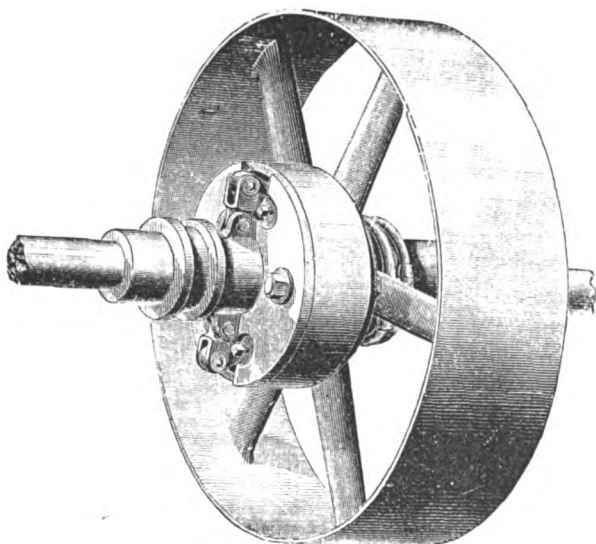
Adjustable in every direction.

For Belt.	Sizes of Pulleys.	Each.
3 inches	8 ins. x 5 ins.	\$40.00
4 "	10 " x 6 "	45.00
5 "	12 " x 7 "	46.00
6 "	14 " x 8 "	48.00

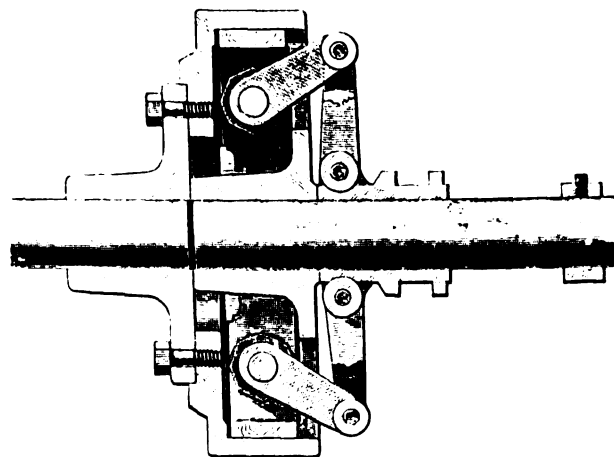
Larger sizes of any desired dimensions made to order. Prices on application.



## PATENT FRICTION CLUTCH COUPLING.



**Fig. 2466.**



**Fig. 2467.**

Diam. of Friction Clutch, ins.	6	9	10	12	15	18	21	24	27	30	36	42	48
Diameter of shaft, inches.....	1½ and under	1¾ to 2½	1¾ to 2½	2¼ to 3	2¾ to 4	3 to 4½	3½ to 5	4 to 8	4½ to 8	5 to 8	5½ to 8	6 to 8	6 to 8
Horse power at 100 rev. per min.	5	10	12	20	30	45	60	80	100	125	180	245	320
Each .....	\$50.00	60.00	65.00	75.00	90.00	115.00	150.00	200.00	235.00	315.00	415.00	550.00	700.00

Diameter, inches.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{2}$	$2\frac{1}{8}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$2\frac{3}{4}$	$3\frac{1}{8}$	$3\frac{3}{8}$	$4\frac{1}{8}$	$4\frac{3}{8}$	$5\frac{1}{8}$	$5\frac{3}{8}$
Per foot.....	\$0.50	.55	.60	.70	.85	.95	1.10	1.10	1.40	1.65	1.90	2.90	3.70	5.40	7.20	9.00
Extra for each journal or shoulder .....	.50	.55	.60	.70	.85	.95	1.00	1.10	1.25	1.40	1.65	1.75	2.00	2.25	2.50	3.00
Extra for each key way within one foot in length....	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.80	.90	1.00	1.25	1.50	2.00

TABLE 1. Diameter and Weight.																				
Diameter, inches.....	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2	$2\frac{1}{8}$	$2\frac{1}{4}$
Weight per foot, lbs..	.167	.260	.375	.511	.667	.845	1.05	1.26	1.50	1.77	2.05	2.35	2.68	3.02	3.38	3.77	4.17	4.61	5.05	5.52
Per lb.....	\$0.13	.11	.10	.10	.10	.09	.09	.09	.09	.07	.07	.07	.07	.06	.06	.06	.05 $\frac{1}{2}$	.05 $\frac{1}{2}$	.05 $\frac{1}{2}$	.05 $\frac{1}{2}$
Diam., ins.....	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{3}{4}$	4	$4\frac{1}{4}$	$4\frac{1}{2}$	$4\frac{3}{4}$	5	$5\frac{1}{4}$	$5\frac{1}{2}$	$5\frac{3}{4}$	6
Wgt. per ft. lbs.	7.61	8.18	8.78	9.39	10.03	10.69	12.07	12.80	13.52	15.07	15.89	16.70	18.41	20.21	22.09	23.06	24.05	26.09	28.22	32.73
Per lb.....	\$0.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05 $\frac{1}{2}$	.05 $\frac{1}{2}$	.05 $\frac{1}{2}$

Diameter of shaft .....	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{2}$	$\frac{11}{16}$	$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$2$	$2\frac{1}{8}$	$2\frac{1}{2}$	$2\frac{3}{4}$	$3$	$3\frac{1}{2}$	$4$	$4\frac{1}{2}$	$5$	$5\frac{1}{2}$
Each .....	\$0.60	.80	.90	1.00	1.25	1.60	1.90	2.40	2.70	3.00	3.50	4.60	5.60	7.00	7.60	9.20			

**Spur Gearing, Bevel Gearing, Mitre and Hunting Tooth Gearing, Spur Mortise Wheels, etc. Separate catalogues and special prices furnished on application.**

## HAND SHEARS AND BOILERMAKERS' TOOLS.

### HAND SHEARS OR SNIPS.

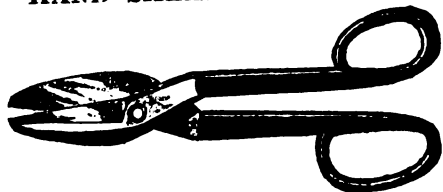


Fig. 2468.

Numbers.....	6 $\frac{1}{2}$	7	8	9	10
Length, Inches.....	16	14	12 $\frac{1}{2}$	10 $\frac{1}{2}$	10
Cut, Inches.....	4 $\frac{1}{2}$	4	3 $\frac{1}{2}$	3	2 $\frac{1}{2}$
Per pair.....	\$3.00	2.50	2.00	1.50	1.40

### BENCH SHEARS. For Cutting Light Metal.

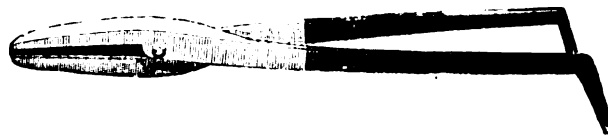


Fig. 2469.

Numbers.....	00	0	1	2	3	4	5	6
Length of Cut, Inches...	12	10 $\frac{1}{2}$	9	8 $\frac{5}{8}$	8 $\frac{3}{8}$	8	7	6
Per pair.....	\$13.50	12.00	8.00	7.00	6.00	5.00	4.00	3.50
Elbow Bench Shears.....	per pair, \$5.25							

### RIVET SET.



Fig. 2470.

Solid Cast Steel.

All Sizes.....per lb., \$0.60

### CIRCULAR HAND SHEARS.

Same Style as Fig. 2468, but with Curved Blade.

Numbers.....	7	8	9	10
Per pair.....	\$3.50	3.00	2.50	2.25

### SCALING PICK.



Fig. 2471.

Solid Cast Steel.

For removing scales from boilers.

1 $\frac{1}{2}$  to 2 $\frac{1}{2}$  lbs.....per lb., \$0.60

### BOILERMAKERS' RIVETING HAMMER.



Fig. 2472.

Solid Cast Steel.

2 to 3 lbs.....per lb., \$0.50

### BOILERMAKERS' REAMERS.

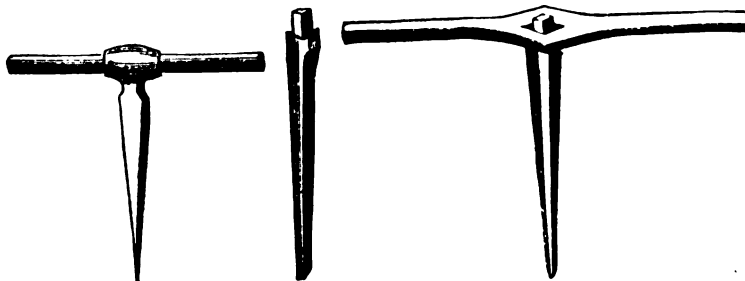


Fig. 2473.

Fig. 2474.

Fig. 2475.

Solid Cast Steel with Wrought Iron Handles.

Reamers, Figs. 2473, 2474 and 2475 per set ..... \$8.00

### BOILERMAKERS' RIVETING HAMMER.



Fig. 2476.

Solid Cast Steel.

2 to 3 lbs.....per lb., \$0.50

### SPRING TUBE EXPANDER.

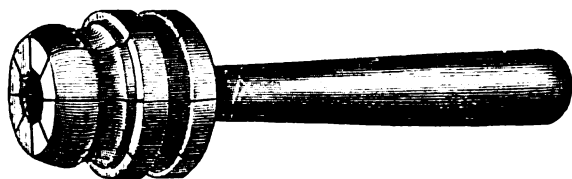


Fig. 2477.

Outside Diam. of Tubes, ins.,	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$
Each .....	\$8.00	8.00	9.00	11.00	12.00	13.00	15.00	18.00
Outside Diam. of Tubes, ins.,	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$	5	6	
Each .....	\$22.00	26.00	30.00	33.00	37.00	42.00	60.00	

When ordering Expanders, state thickness of tube sheet for which they are required.

### GUIDE RING TUBE EXPANDER.

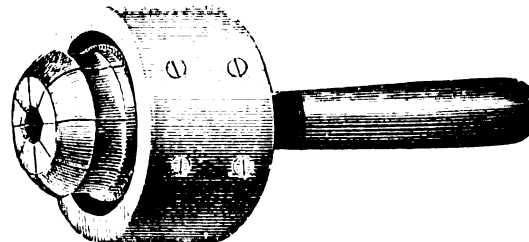


Fig. 2478.

Outside Diam. of Tubes, ins.,	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$
Each.....	\$11.00	12.00	13.00	15.00	18.00	22.00	26.00
Outside Diam. of Tubes, ins.,	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$	5	6
Each.....	\$30.00	33.00	37.00	45.00	52.00	56.00	75.00

### ROLLER TUBE EXPANDER. Dudgeon's Improved.

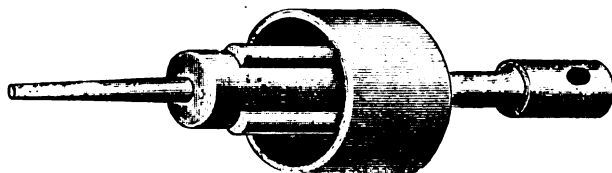


Fig. 2479.

### ROLLER TUBE EXPANDER.

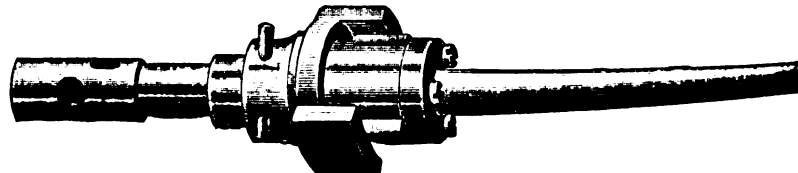


Fig. 2480.

#### Prices, Dudgeon's Roller Tube Expanders, Fig. 2479.

These Expanders will expand three different sizes of tubes without changing the rollers.

These Expanders will expand three different sizes of tubes without changing the rollers.												
Sizes, inches...	1	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{5}{8}$ &1 $\frac{3}{4}$	1 $\frac{3}{4}$ &1 $\frac{7}{8}$	1 $\frac{7}{8}$ &2	2, 2 $\frac{1}{8}$ &2 $\frac{1}{4}$	2 $\frac{1}{4}$ , 2 $\frac{3}{8}$ &2 $\frac{1}{2}$	2 $\frac{1}{2}$ , 2 $\frac{5}{8}$ &2 $\frac{3}{4}$	2 $\frac{3}{4}$ , 2 $\frac{7}{8}$ &3	3, 3 $\frac{1}{8}$ &3 $\frac{1}{4}$
Each.....	\$15.00	15.00	15.00	15.00	20.00	20.00	25.00	30.00	36.00	39.00	45.00	52.00
Sizes, inches...	3 $\frac{1}{4}$ , 3 $\frac{3}{8}$ &3 $\frac{1}{2}$	3 $\frac{1}{2}$ , 3 $\frac{5}{8}$ &3 $\frac{3}{4}$	3 $\frac{3}{4}$ , 3 $\frac{7}{8}$ &4	4, 4 $\frac{1}{8}$ &4 $\frac{1}{4}$	4 $\frac{1}{4}$ , 4 $\frac{3}{8}$ &4 $\frac{1}{2}$	4 $\frac{1}{2}$ , 4 $\frac{5}{8}$ &4 $\frac{3}{4}$	4 $\frac{3}{4}$ , 4 $\frac{7}{8}$ &5	5, 5 $\frac{1}{4}$ &5 $\frac{1}{2}$	5 $\frac{1}{2}$ , 5 $\frac{3}{4}$ &6	6, 6 $\frac{1}{4}$ &6 $\frac{1}{2}$		
Each .....	\$60.00	70.00	75.00	80.00	85.00	85.00	90.00	100.00	105.00	115.00		

In ordering, give outside diameter and largest tube that you wish to expand; they answer for any thickness of tube sheet.

#### Prices, Roller Tube Expanders, Fig. 2480.

Sizes, inches...	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$	5	6	7
Each.....	\$7.00	7.00	7.00	8.50	10.00	12.00	14.00	16.00	18.00	20.00	23.00	28.00	33.00	40.00	48.00	60.00

The dimensions given above are for outside diameter of tubes.

PUNCHES AND SHEARS.

LEVER PUNCH.

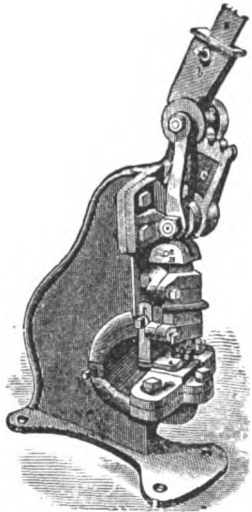


Fig. 2481.

STEEL  
SCREW PUNCH.

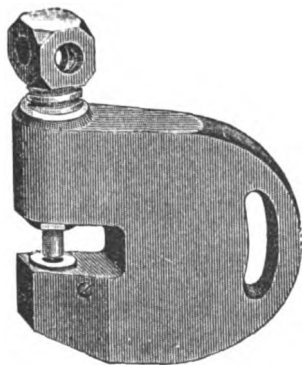


Fig. 2482.

HYDRAULIC  
SCREW PUNCH.

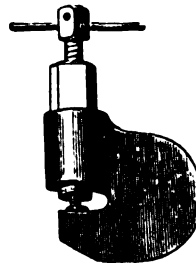


Fig. 2483.

HYDRAULIC  
HEAD PUNCH.

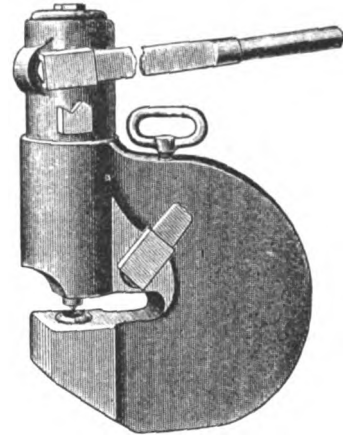


Fig. 2484.

Prices, Lever Punches, Fig. 2481.

Nos.	Will Punch.	Distance Edge to Center of Hole.	Weight.	Each.
0	1 inch hole in 1 inch iron	2 1/2 inches	33 pounds	\$20.00
1	" " " "	3 1/2 " "	65 " "	26.00
2	" " " "	3 3/4 " "	115 " "	40.00
3	" " " "	4 " "	175 " "	52.00
3 1/2	" " " "	4 " "	200 " "	65.00
4	" " " "	4 " "	360 " "	88.00
5	" " " "	7 1/2 " "	590 " "	115.00

Prices, Steel Screw Punches, Fig. 2482.

Nos.	Will Punch.	Distance Edge to Center of Hole.	Each.
1	1 inch hole in 1 inch iron	2 1/2 inches	\$75.00
2	" " " "	2 " "	40.00
3	" " " "	1 1/2 " "	32.00

Prices, Hydraulic Punches, Figs. 2483 and 2484.

These Punches are for use of boiler makers, machinists and iron ship builders in punching iron or steel, and for other purposes where a limited amount of movement and great power is required.

The Screw Punch, Fig. 2483, is in general use in boiler shops, etc. The head punch, having head same as a jack, will do nearly double the amount of work in the same length of time. Prices same for either style.

No. 1	will punch 1 1/4 inch iron for 5/8 inch rivets or bolts.	each, \$70.00
" 2	" " 3/8 " " 5/8 " " " "	80.00
" 3	" " 1/2 " " 5/8 " " " "	100.00
" 4	" " 1/2 " " 3/4 " " " "	120.00
" 5	" " 5/8 " " 3/4 " " " "	150.00
" 6	" " 3/4 " " 7/8 " " " "	200.00

PLATE SHEAR.

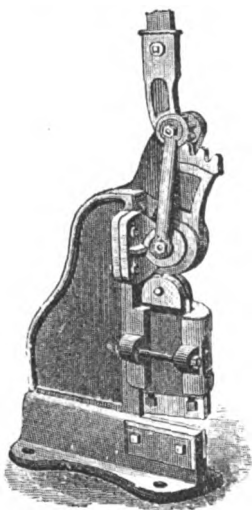


Fig. 2485.

BAR IRON  
SHEAR.

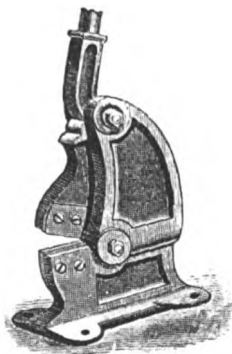


Fig. 2486.

PUNCH AND SHEAR  
COMBINED.

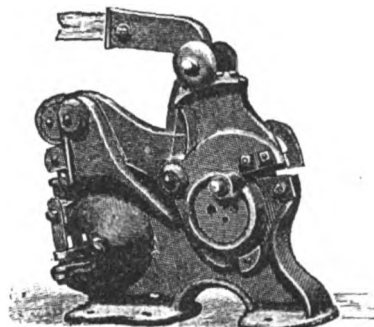


Fig. 2487.

ROUND IRON SHEAR.

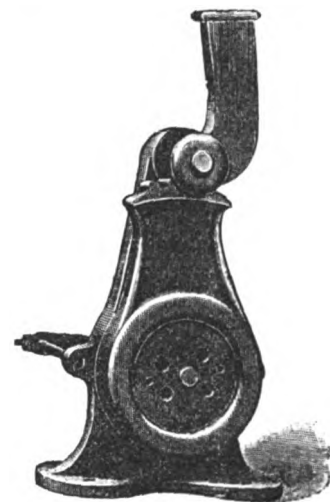


Fig. 2488.

Prices, Plate Shears, Fig. 2485.

No. 1	will cut 3/8 inch plate iron, weight, 115 pounds	each, \$10.00
" 2	" " " " " " 210 " "	50.00
" 3	" " " " " " 275 " "	66.00
" 4	" " " " " " 475 " "	90.00

Will cut through plate iron of any width.

Prices, Combined Punch and Shears, Fig. 2487.

No. 0	will cut 3/8 inch wire, and punch 1/4 inch hole in and cut thin hoop iron	each, \$15.00
No. 2	will cut 1/2, 3/8 and 1/4 inch round iron, and 2x1 1/4 inch bar iron, and punch 1/4 inch hole in 1/4 inch iron, 3 3/4 inches from edge to center of hole, weight 200 pounds	each, 50.00
No. 3	will cut 3/4, 5/8 and 1/2 inch round iron, and 3 1/2 x 3/8 inch bar iron, and punch 3/8 inch hole in 3/8 inch iron, 4 inches from edge to center of hole, weight 450 pounds	each, 100.00

These machines are carefully put together and of the best material.

Prices, Bar Iron Shears, Fig. 2486.

No. 0	will cut 1 x 1/2 inch bar iron, weight 4 pounds	each, \$ 6.00
" 1	" " 1 1/2 x 1/2 " " " "	30 " "
" 2	" " 1 1/2 x 1 " " " "	68 " "
" 3	" " 2 x 1 1/2 " " " "	88 " "
" 4	" " 2 x 2 " " " "	155 " "

Prices, Round Iron Shears, Fig. 2488.

No. 0	will cut 1/4 inch and smaller	each, \$ 6.00
" 1	" " 1/8, 1/4 and 3/8 inch	10.00
" 2	" " 3/8, 1/2 and 5/8 " "	14.00
" 3	" " 1/2, 3/4 and 1 " "	18.00
" 4	" " 3/4, 1 and 1 1/4 " "	23.00
" 5	" " 1, 1 1/4 and 1 1/2 " "	35.00
" 6	" " 1 1/4, 1 1/2 and 1 3/4 " "	48.00
" 7	" " 1 1/2, 1 3/4 and 2 " "	60.00
" 8	" " 1 3/4, 2, 2 1/4 and 2 1/2 inch	80.00

Shears same style as Fig. 2488, but for cutting square iron, built to order. Prices on application.

THORNTON N. MOTLEY, NEW YORK.

## SHEARS AND STEAM HAMMERS.

POWER BAR IRON SHEAR.

HERCULES IRON CUTTER.

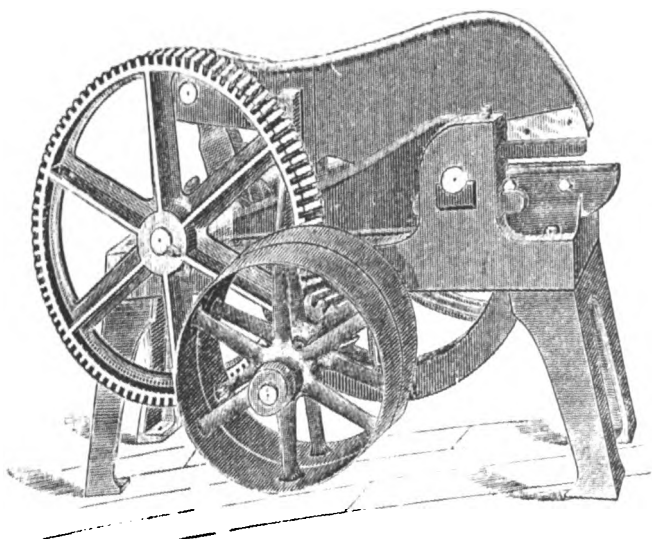


Fig. 2489.

This machine is built in a first class manner throughout. Shafts and pins are all steel. Boxes babbitted. It will cut 6x12 in., 3x34 in. flat bar iron or 114 in. round cold. Weight, 2500 lbs.; pulleys, 18x6 inches; floor space, 3x5 feet. Each.....\$300.00

### SINGLE FRAME SELF-ACTING STEAM HAMMER.

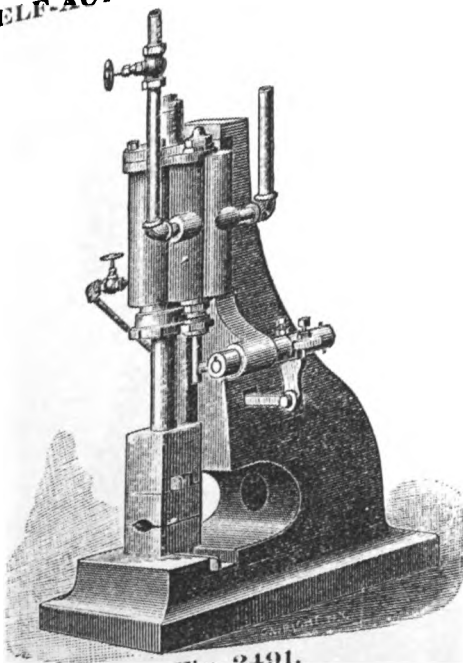


Fig. 2491.

Capacity up to 114 inch round iron. Also for swaging bolts, tangs of files, etc.  
Weight ..... 600 lbs.  
Each.....\$200.00

Price, Eureka Steam Hammer, No. 1.  
Fig. 2492.

No. 1 capacity up to 3 inch round or square iron; diameter of cylinder, 5 inches; length of stroke, 10 inches; weight, 2000 lbs.  
Without anvil.....each, \$275.00  
With anvil....." 355.00  
With iron frame anvil and bed plate " 500.00

### EUREKA SELF-ACTING STEAM HAMMER.

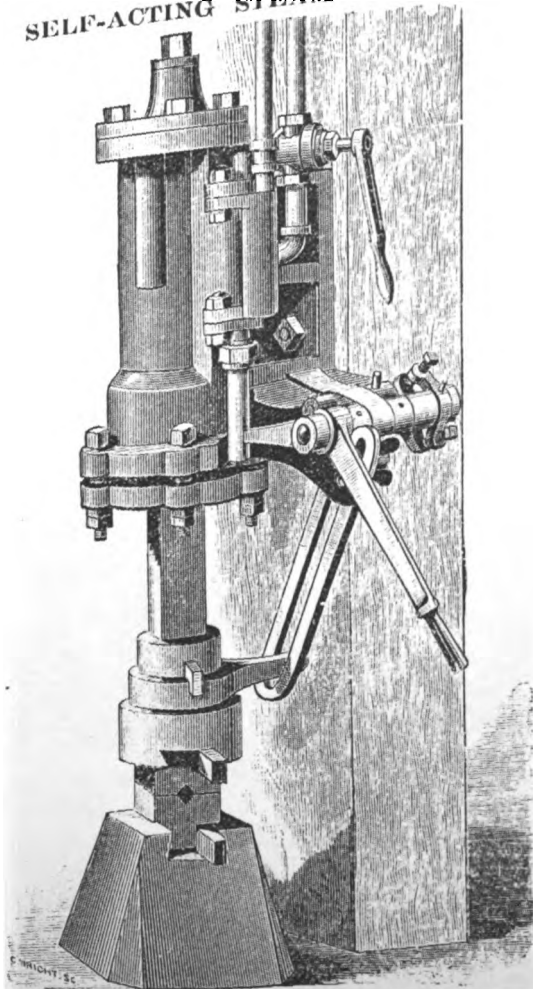


Fig. 2492.

Weight of Anvils for Eureka Hammers.  
Anvil for No. 1 Hammer should weigh 1700 lbs.  
" " 2 " " " 2300 "  
Full directions for setting hammer and anvil sent with each hammer.



Fig. 2490.

This is the most powerful hand shear made.

No. 1	will cut	3x2 ins. or 1 1/2 in. round or square,	weight 62 lbs..each,	\$30.00
" 2	"	3x2 " 3/4 " " " "	165 " " "	45.00
" 3	"	3x1 " 1 " " "	357 " " "	60.00

### SINGLE FRAME SLIDE STEAM HAMMER.

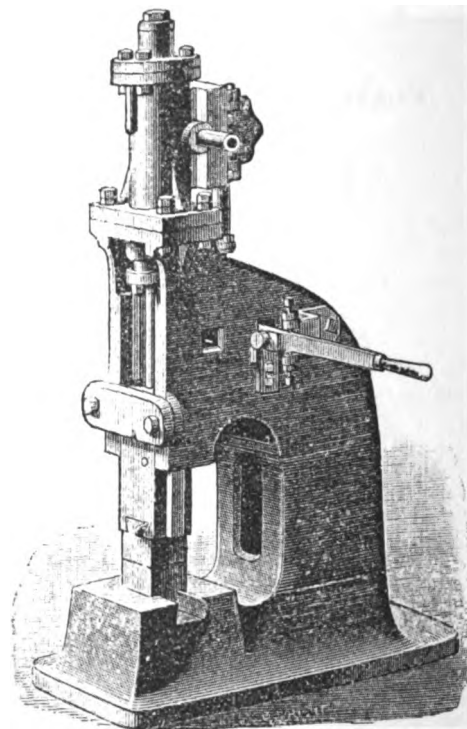


Fig. 2493.

Capable of working iron up to 134 inches, round or square.

Diameter of cylinder.....	31 1/2 inches.
Length of stroke .....	7 " "
Weight .....	1500 lbs.
Each.....	\$280.00

Price, Eureka Steam Hammer, No. 2.  
Fig. 2492.

No. 2 capacity up to 5 inch round or square iron; diameter of cylinder, 5 1/2 inches; length of stroke, 16 inches; weight, 3500 lbs.  
Without anvil.....each, \$325.00  
With anvil....." 450.00  
With iron frame, anvil and bed plate " 600.00

# OIL STONES, TURNING TOOLS AND EMERY WHEELS.

## WASHITA AND ARKANSAS OIL STONES.

Pen Knife Piece.



Fig. 2494.

Square File Slip.



Fig. 2497.

Flat File Slip.

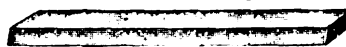


Fig. 2500.

Round Edge Slip.

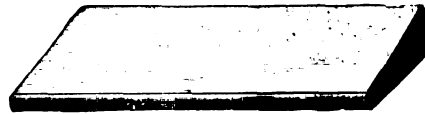


Fig. 2495.

Diamond Shaped Slip.

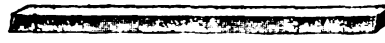


Fig. 2498.

Knife Blade.



Fig. 2496.

Triangular Slip.

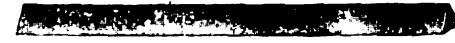


Fig. 2499.

Point.

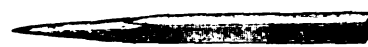


Fig. 2501.

### Prices, Washita Stone.

Extra Oil Stone, 8x2x1 1/4 inches, per lb.,	\$0.50
No. 1 " " 8x2x1 1/4 " " "	.40
No. 2 " " 8x2x1 1/4 " " "	.30
High Rounds 8x2x1 1/4 " " "	.50
Axe Stone.....	.20
Round Edge Slips, 3 1/2 to 5x1 1/2 ins.,	.70
Pen Knife Pieces, 3 to 5x1 to 1 3/8 " " "	.80
Needle Pieces.....per 100,	10.00
Wheels.....per inch,	.80
Square Files, 4x1 1/2x1 1/4 inch.....per doz.,	3.00

### Prices, Arkansas Stone.

No. 1 Oil Stone, 4 to 6x2x3/4 to 1 in. ....per lb.,	\$2.70
" 1 " 6 to 9x2x3/4 to 1 " " "	3.50
" 2 " 4 to 6x2x3/4 to 1 " " "	1.40
Round Edge Slips, assorted sizes " " "	4.00
Pen Knife Pieces, assorted sizes " " "	4.00
Needle Pieces.....per 100,	16.00

### Prices, Arkansas Stone.

Square File Slips, 3 to 4 ins. long, per doz.,	\$4.00
Flat " " 3 to 4 " " " "	4.00
Beveled " " 3 1/2 to 4 1/2 ins. long, " " "	5.00
Diamonds, 3 1/2 to 4 1/2 " " " "	6.00
Triangulars, 3 1/2 to 4 1/2 " " " "	6.00
Knife Blades, 3 to 4 " " " "	6.00
Points, 3 to 3 1/2 " " " "	5.00
Points, short.....	4.00
Wheels, 2 to 4 inch, 1/2 inch thick, per inch,	2.00
Oil Stone Powders.....per lb.,	.40

### Prices, Hindostan Stone.

No. 1 Oil Stone, assorted sizes.....per lb.,	\$0.06
Axe Stone, assorted sizes.....	.08
Round Edge Slips, assorted sizes.....	.10

### Prices, Mounted Washita Stone.

Size of Stone, 3 1/2x1 in., per doz.,	\$5.00	Size of Stone, 7x2 ins., per doz.,	\$10.00	Size of Stone, 3 1/2x1 in., per doz.,	\$9.00	Size of Stone, 7x2 ins., per doz.,	\$40.00
" " 5 x 1 7/8 " " "	8.00	" " 8x2 " " "	11.00	" " 5 x 1 7/8 " " "	24.00	" " 8x2 " " "	44.00
" " 6 x 2 " " "	9.00			" " 6 x 2 " " "	36.00		

## Mounted Oil Stone.



Fig. 2502.

### Prices, Sand Stone.

Small, medium and large, in pieces, about	
1, 1 1/2 and 2 pounds.....each, per lb.,	\$0.05
Extra (all white).....	.10

### Prices, Mounted Arkansas Stone.

Size of Stone, 3 1/2x1 in., per doz.,	\$9.00	Size of Stone, 7x2 ins., per doz.,	\$40.00
" " 5 x 1 7/8 " " "	24.00	" " 8x2 " " "	44.00
" " 6 x 2 " " "	36.00		

## DIAMOND TURNING TOOLS, FOR TURNING EMERY WHEELS AND GRINDSTONES.



Fig. 2503.

Each.....\$10.00



Fig. 2504.

Each.....\$6.00



Fig. 2405.

Each.....\$18.00

## HUNTINGTON EMERY WHEEL DRESSERS.

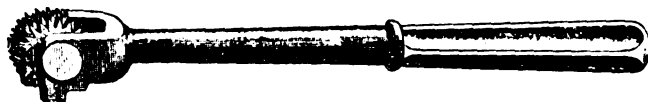


Fig. 2506.

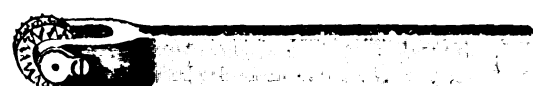


Fig. 2507.

Complete with two cutters.....each,	\$3.00	Complete with two cutters.....each,	\$3.00
Extra cutters.....per set,	.60	Extra cutters.....per set,	.60

## SOLID EMERY AND CORUNDUM WHEELS.

Diameter. Inches.	THICKNESS OF WHEELS IN INCHES.																Revolutions per Minute.
	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	
1 1/2	\$0.40	\$0.45	\$0.50	\$0.55	\$0.60	\$0.65	\$0.70	\$0.75	\$0.80	\$0.85	\$0.90	\$0.95	\$1.00	\$1.05	\$1.10	\$1.15	14000
2	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.05	1.10	1.15	1.20	1.25	10000
2 1/2	.65	.75	.85	.95	1.05	1.15	1.25	1.35	1.45	1.55	1.65	1.75	1.85	1.95	2.05	2.15	8500
3	.80	.95	1.10	1.25	1.40	1.55	1.70	1.85	2.00	2.15	2.30	2.45	2.60	2.75	2.90	3.05	7000
3 1/2	.95	1.15	1.35	1.55	1.75	1.95	2.15	2.35	2.55	2.75	2.95	3.15	3.35	3.55	3.75	3.95	6035
4	1.10	1.35	1.60	1.85	2.10	2.35	2.60	2.85	3.10	3.35	3.60	3.85	4.10	4.35	4.60	4.85	5300
4 1/2	1.25	1.55	1.85	2.15	2.45	2.75	3.05	3.35	3.65	3.95	4.25	4.55	4.85	5.15	5.45	5.75	4700
5	1.40	1.80	2.20	2.60	3.00	3.40	3.80	4.20	4.60	5.00	5.40	5.80	6.20	6.60	7.00	7.40	4200
6	1.75	2.40	3.05	3.70	4.35	5.00	5.65	6.30	6.95	7.60	8.25	8.90	9.55	10.20	10.85	11.50	3500
7	2.15	3.00	3.85	4.70	5.55	6.40	7.25	8.10	8.95	9.80	10.65	11.50	12.35	13.20	14.05	14.90	3000
8	2.60	3.60	4.60	5.60	6.60	7.60	8.60	9.60	10.60	11.60	12.60	13.60	14.60	15.60	16.60	17.60	2600
9	3.10	4.25	5.40	6.55	7.70	8.85	10.00	11.15	12.30	13.45	14.60	15.75	16.90	18.05	19.20	20.35	2300
10	3.65	5.00	6.35	7.70	9.05	10.40	11.75	13.10	14.45	15.80	17.15	18.50	19.85	21.20	22.55	23.90	2100
12	4.60	6.35	8.10	9.85	11.60	13.35	15.10	16.85	18.60	20.35	22.10	23.85	25.60	27.35	29.10	30.85	1750
14	6.25	8.45	10.65	12.85	15.05	17.25	19.45	21.65	23.85	26.05	28.25	30.45	32.65	34.85	37.05	39.25	1500
16	8.00	10.85	13.70	16.55	19.40	22.25	25.10	27.95	30.80	33.65	36.50	39.35	42.20	45.05	47.90	50.75	1300
18	9.50	13.25	17.00	20.75	24.50	28.25	32.00	35.75	39.50	43.25	47.00	50.75	54.50	58.25	62.00	65.75	1150
20	11.25	15.75	20.25	24.75	29.25	33.75	38.25	42.75	47.25	51.75	56.25	60.75	65.25	69.75	74.25	78.75	1050
22	13.00	19.00	25.00	31.00	37.00	43.00	49.00	55.00	61.00	67.00	73.00	79.00	85.00	91.00	97.00	103.00	950
24	15.00	22.00	29.00	36.00	43.00	50.00	57.00	64.00	71.00	78.00	85.00	92.00	99.00	106.00	113.00	120.00	850
26			35.00	43.00	51.00	59.00	67.00	75.00	83.00	91.00	99.00	107.00	115.00	123.00	131.00	139.00	775
30				50.00	61.00	72.00	83.00	94.00	105.00	116.00	127.00	138.00	149.00	160.00	171.00	182.00	700
36					95.00	110.50	126.00	141.50	157.00	172.50	188.00	203.50	219.00	234.50	250.00		525

Wheels less than one-half inch thick, same price as one-half inch.

In ordering Emery Wheels, state the diameter, thickness, shape of face, diameter of hole in the center, also the kind of work you wish to do with the wheel.

**TANITE EMERY WHEELS.**  
Special prices on application.

**SOLID EMERY VULCANITE WHEELS.**  
Special prices on application.

**CELLULOID EMERY WHEELS.**  
Special prices on application.



THORNTON N. MOTLEY, NEW YORK.

## GRINDSTONE FIXTURES, GRINDSTONES, ETC.

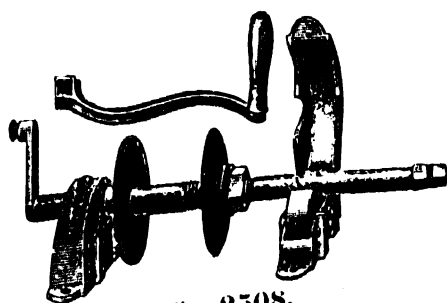
GRINDSTONE FIXTURES.  
For Hand or Foot.

Fig. 2508.

**Japanned, Incased Rollers.**  
Nos. .... 22½ 23 23½ 24 24½ 25  
Length shaft, ins. 15 17 19 21 24 28  
Per doz. sets. \$5.70 6.45 7.50 9.00 10.25 11.50

**Extra Heavy, Japanned, Polished Shafts, Incased Rollers.**  
Nos. .... 32½ 33 33½ 34 34½ 35  
Length shaft, ins. 15 17 19 21 24 28  
Per doz. sets. \$10.00 11.00 12.00 13.50 15.00 16.50

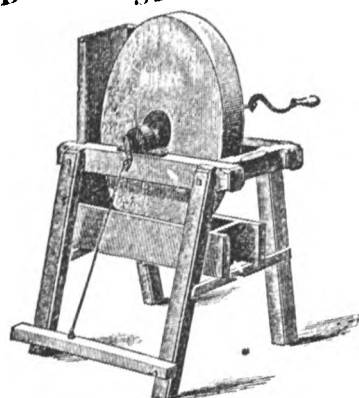
WOOD GRINDSTONE FRAME WITH  
STONE.

Fig. 2511.

Heavy hard wood frames, with water box and treadle complete.

Nos.	Weight. Lbs.	Diam. Ins.	Each.	Nos.	Weight. Lbs.	Diam. Ins.	Each.
1	50	18	\$5.50	8	120	26	\$7.50
2	60	20	5.75	9	130	27	7.75
3	70	21	6.00	10	140	28	8.00
4	80	22	6.25	11	160	30	8.75
5	90	23	6.50	12	200	34	10.00
6	100	24	7.00	13	300	36	15.00
7	110	25	7.25				

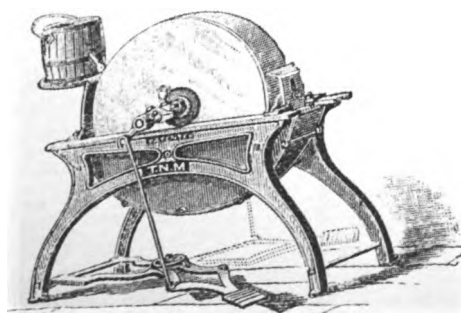
IRON GRINDSTONE FRAME WITH  
STONE.

Fig. 2514.

Nos.	Power applied by.	Size of Stone.	Each.	Shield Pan and Mounted. Bucket Extra.
0	Treadle.	24x24 ins.	\$14.00	\$1.00
0½	Pulley.	24x24 ins.	14.00	1.00
1	Pulley.	24x3 ins.	15.00	1.00
2	Pulley.	27x3½ ins.	22.00	2.00
3	Pulley.	30x4 ins.	26.00	2.00

## GRINDSTONE DRESSING MACHINE.

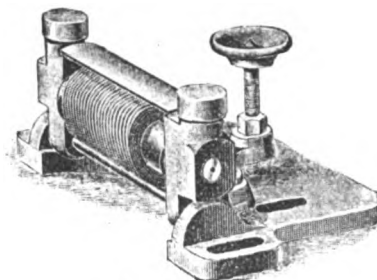


Fig. 2509.

This is an attachment for keeping the faces of grindstones true. It is so constructed that it may be used at any time, either while the stone is being used to grind or not. The cutting roll is formed of discs, which present to the stone curved or serpentine edges, which in their revolutions each cover alternately, at the right and left the space occupied by two or more discs, producing on the face of the stone a perfectly true surface.

Prices.	4	6	8	10	12
Sizes, inches. ....	4	6	8	10	12
Each .....	\$7.50	10.00	12.00	14.00	16.00
Extra Discs .....				each, \$0.05	

## GRINDSTONES.

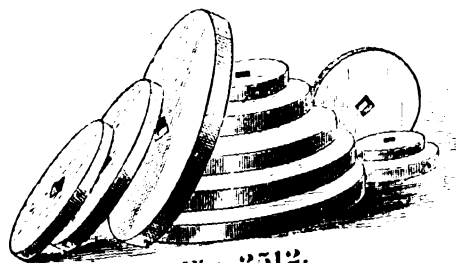


Fig. 2512.

Nova Scotia .....	per lb., \$0.04
New Castle (English) .....	.. .01
Amherst (Ohio) .....	.. .03
Independence (Ohio) .....	.. .03
Berea (Ohio) .....	.. .03

When ordering state for what purpose stone is required. By so doing you will get the proper grit.

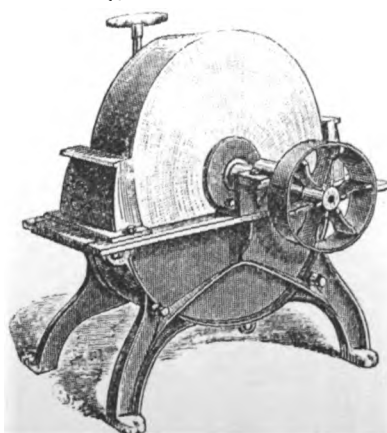
HEAVY IRON GRINDSTONE FRAME  
WITH STONE.

Fig. 2515.

This Frame is extra heavy, and made from improved pattern. Shafts are turned and run in babbitted boxes.

Complete, with pulley, table for bucket, and shields.  
Stone 4 to 5 inches x 36 inches.

Each ..... \$10.00

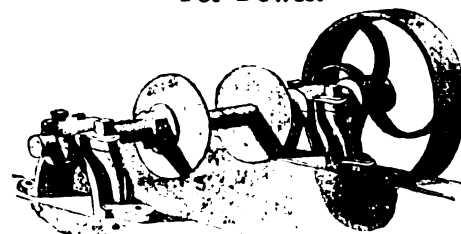
GRINDSTONE FIXTURES.  
For Power.

Fig. 2510.

**Prices, Fixtures with Single Pulleys.**  
Pulleys for all sizes are 12 inches diameter by 3 inches face.

Nos.	1	2	3
Suitable for stones, inches. ....	36x4	48x6	48x8
Per set .....	\$8.00	24.00	34.00

**Prices, Fixtures with Fast and Loose Pulleys.**

Nos.	4	5	6
Suitable for stones, inches. ....	36x4	48x6	48x8
Per set .....	\$9.00	25.00	35.00

PATENT CAST IRON GRINDSTONE  
FRAME.

Fig. 2513.

Prices are for frames only without stones.

No. 1, with pulley only, for stone 30x4½ inches .....	each, \$15.00
No. 2, with pulley and treadle, for stone 30x4½ inches .....	each, 16.00
No. 3, with pulley only, for stone 48x6 inches .....	each, 50.00

Prices Cast Frames as above, but with common fixtures.

Hand or Foot ..... each, \$12.00 |

HEAVY WOOD GRINDSTONE  
FRAME WITH STONE.

Fig. 2516.

This Frame is extra heavy, and made from well seasoned selected oak.

**Prices, Complete with Shafts and Stones.**

No. 1, for stones 3 to 3½ ins. x 24 ins. each, \$13.00
" 2, " 4 to 4½ ins. x 30 ins. " 20.00
" 3, " 4 to 5 ins. x 36 ins. " 30.00

Digitized by Google

## EMERY WHEEL GRINDING MACHINERY.

GRINDING MACHINE No. 1.

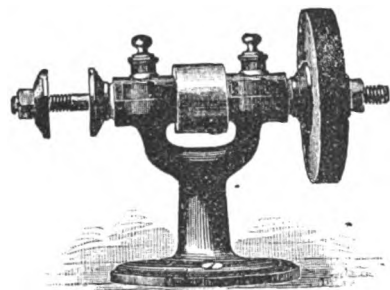


Fig. 2517.

Will run wheels up to 6 inches.  
Size of arbor between flanges,  $\frac{1}{2}$  inch.

Weight, 14 pounds.....each, \$8.00

GRINDING MACHINE No. 2.

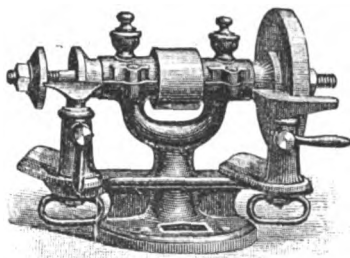


Fig. 2518.

Will run wheels up to 6 inches.  
Size of arbor between flanges,  $\frac{1}{2}$  inch.

Weight, 18 pounds.....each, \$11.00

GRINDING MACHINE No. 3.

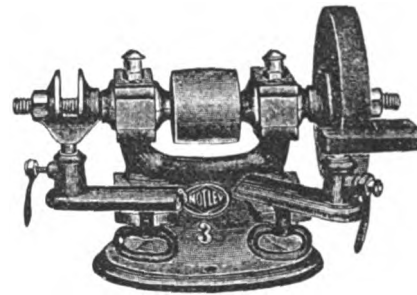


Fig. 2519.

Will run wheels up to 9 inches.  
Size of arbor between flanges,  $\frac{3}{4}$  inch.

Weight, 40 pounds.....each, \$17.50

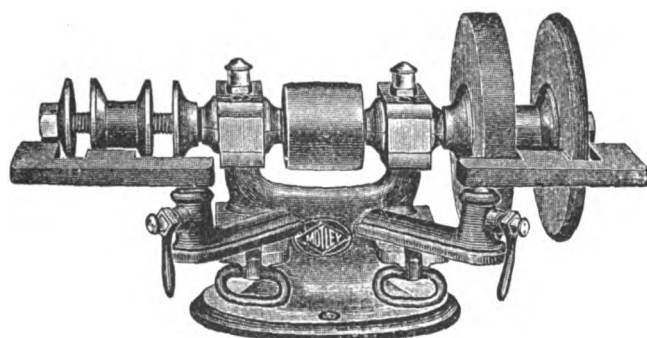
FOUR WHEEL  
GRINDING MACHINE.

Fig. 2520.

Will run wheels 10 inches in diameter.  
Weight of machine, 50 pounds.

With  $\frac{3}{4}$  inch mandrel between flanges. ....each, \$20.00  
" 1 " " " " " " " " " " " " 30.00

COLUMN PEDESTAL.  
For Mounting Grinding  
Machines, Nos. 1, 2 and 3.

Fig. 2521.

Weight of Column.....100 lbs.  
Size of Base.....16x13 inches.  
Size of Iron Table.....16x10 inches.  
Height from floor.....34 inches.  
With Water Pot.....each, \$12.00

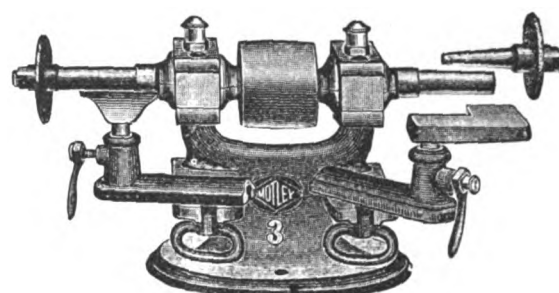
GRINDING MACHINE.  
With Taper Arbors.

Fig. 2522.

No. 3A, with  $\frac{3}{4}$  inch spindle (outside of boxes) and two taper  
arbors with two emery wheels, 6x $\frac{1}{2}$  inch, each, \$25.00  
No. 3 $\frac{1}{2}$ A, with 1 inch spindle (outside of boxes) and two taper  
arbors with two emery wheels, 9x $\frac{1}{2}$  inch, each, \$37.00  
Extra Taper Arbors, without wheels.....each, \$3.00

GRINDING MACHINE No. 4.

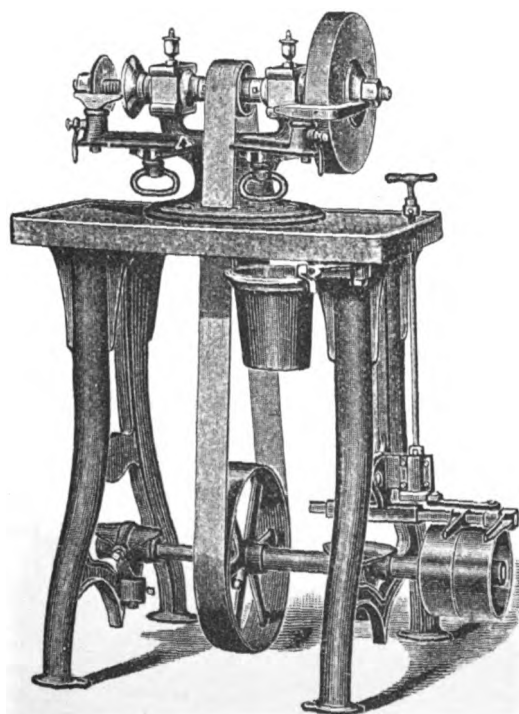


Fig. 2523.

Prices and Dimensions  
Grinding Machine No. 4, Fig. 2523.

Weight with frame and countershaft, 285 lbs.  
Size of base.....12x8 $\frac{1}{2}$  ins.  
Height from bench to center of spindle... 8 $\frac{1}{2}$  "  
Distance between wheels.....14 "  
Length of bearings.....4 "  
Diameter of spindle in bearings.....1 $\frac{1}{8}$  "  
Diameter of spindle between flanges... 1 "  
Size of Pulley on Spindle.....4x3 $\frac{1}{2}$  "  
Complete with driving shaft.....each, \$60.00

Prices and Dimensions  
Grinding Machine No. 5, Fig. 2524.

Weight with iron column.....275 lbs.  
Size of base.....13x10 ins.  
Height from bench to center of spindle... 8 $\frac{1}{2}$  "  
Distance between wheels.....16 "  
Length of bearings.....4 $\frac{1}{2}$  "  
Diameter of spindle in bearings.....1 $\frac{1}{4}$  "  
Diameter of spindle between flanges... 1 "  
Size of cone pulley on spindle, 4 $\frac{1}{2}$  and 3 $\frac{1}{2}$ x3 $\frac{1}{4}$  "  
Complete with countershaft.....each, \$67.50  
Machine only without column or C. S. " 35.50  
Iron column and table with pot " 15.00  
Countershaft with cone pulley..... " 17.00

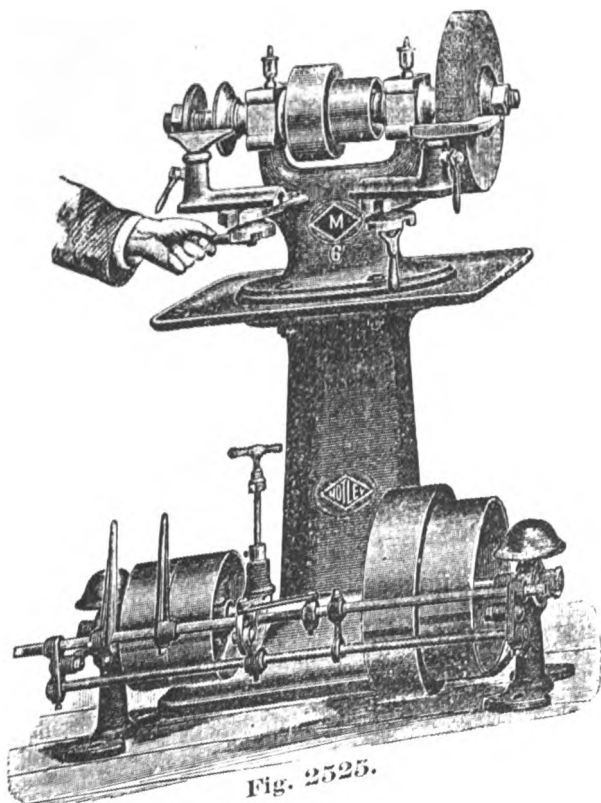
GRINDING MACHINE No. 5.



Fig. 2524.

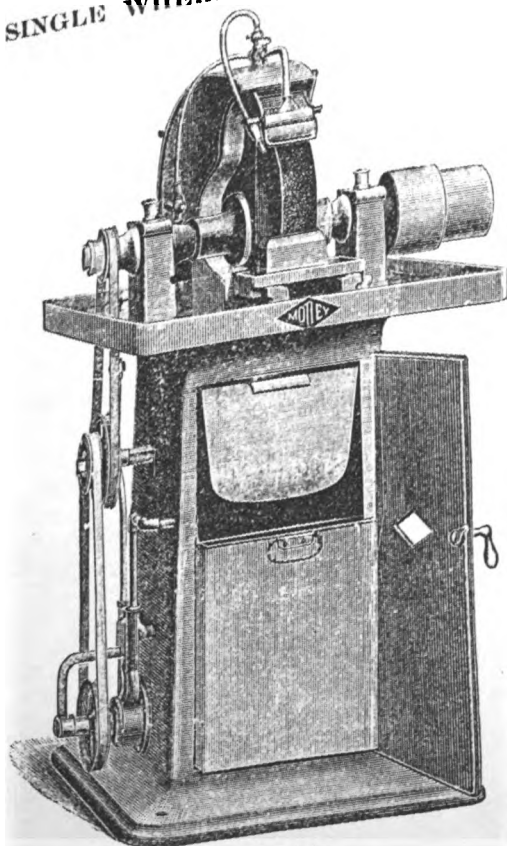
## EMERY WHEEL GRINDING MACHINERY.

### GRINDING MACHINE, No. 6.



**Fig. 2525.**

**SINGLE WHEEL TOOL GRINDER.**

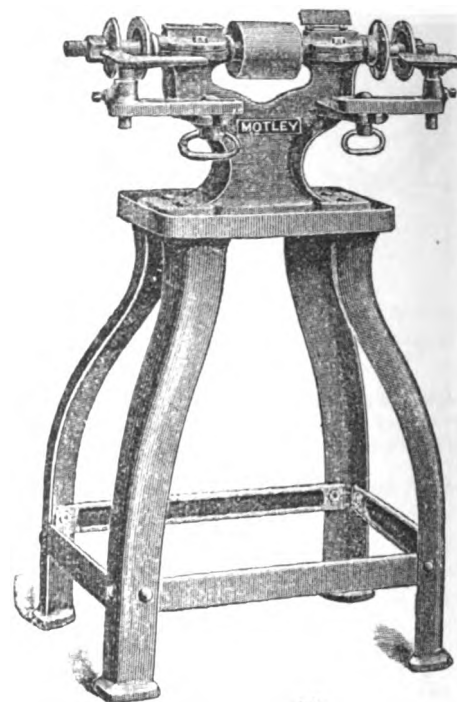


**Fig. 2527.**

**Fig. 2527.**  
**Size of base, 24x27 inches. Height from floor to center of spindle, 38 inches.**  
**Length of bearings, 7 inches. Diameter of spindle in bearings, 11½ inches.**  
**Diameter of spindle between flanges, 13¼ inches. Size of cone pulley on spindle,**  
**5 and 6x4 inches.**

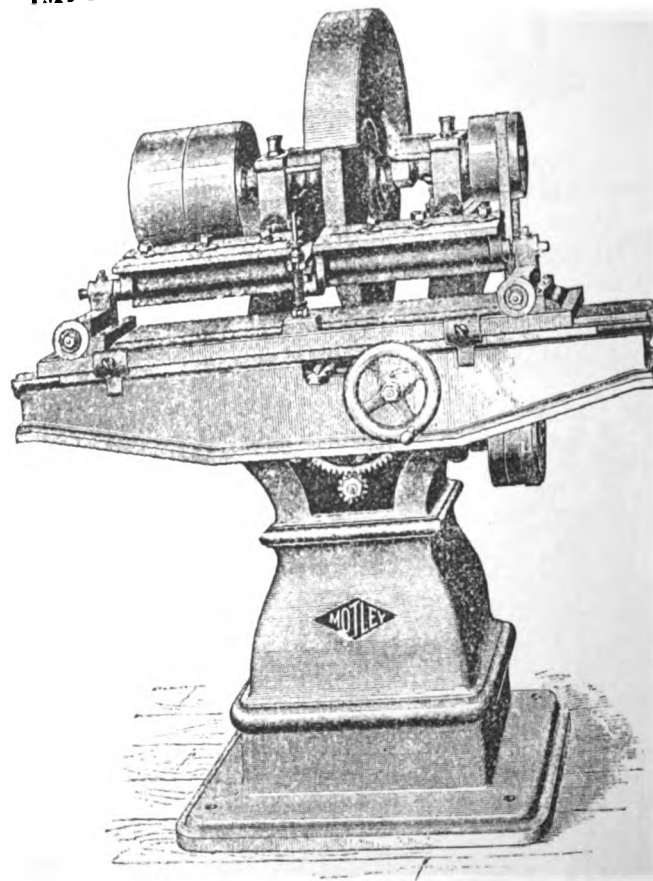
No. 2, With emery wheel, 18x21x1 <sup>3</sup> / <sub>4</sub> inch hole, countershaft and patent tool holder.....	each, \$150 00
No. 3, With emery wheel, 21x31x1 <sup>3</sup> / <sub>4</sub> inch hole, countershaft and patent tool holder.....	each, \$250 00

### STANDARD GRINDING MACHINE.



**Fig. 2526.**

## IMPROVED AUTOMATIC KNIFE GRINDER.



**Fig. 2528.**

For grinding and sharpening planer, paper cutter, veneer, and other long knives.

Diameter driving pulley,  $8 \times 4\frac{1}{2}$  inches. Emery wheels used are  $22 \times 1\frac{1}{2}$  inches; they should run 250 revolutions per minute.

24	inch	Knife	Grinder, including emery wheel, weight 750 lbs., each,	\$150.00
30	"	"	" " " " " " " " 850	175.00
36	"	"	" " " " " " " " 1000	225.00
50	"	"	" " " " " " " " 1250	250.00

Other sizes Knife Grinders, made to order.

# EMERY WHEEL GRINDING MACHINERY.

## UNIVERSAL GRINDING MACHINE.

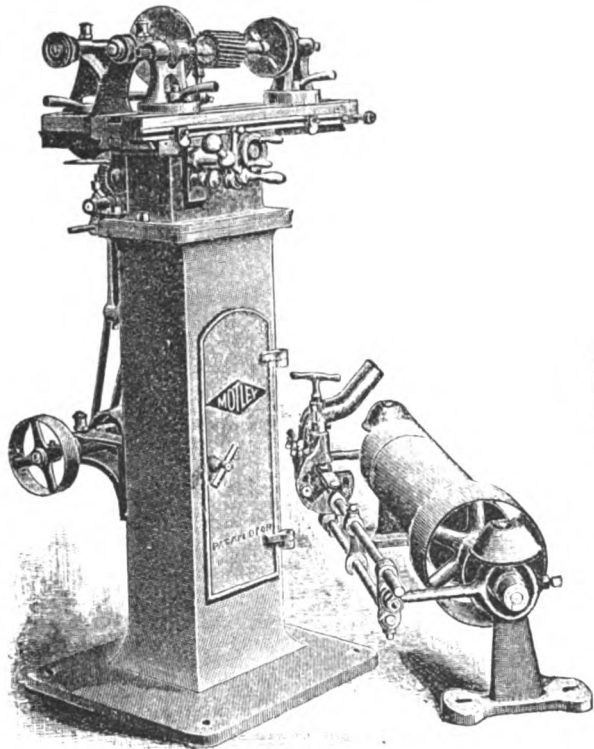


Fig. 2529.

No. 1, 10 inch swing, 16 inches between centers, complete as shown in cut, each, \$275.00  
 Chuck extra ..... " 25.00  
 No. 2, 12 inch swing, 24 inches between centers ..... each, 600.00

## BENCH TOOL GRINDER.

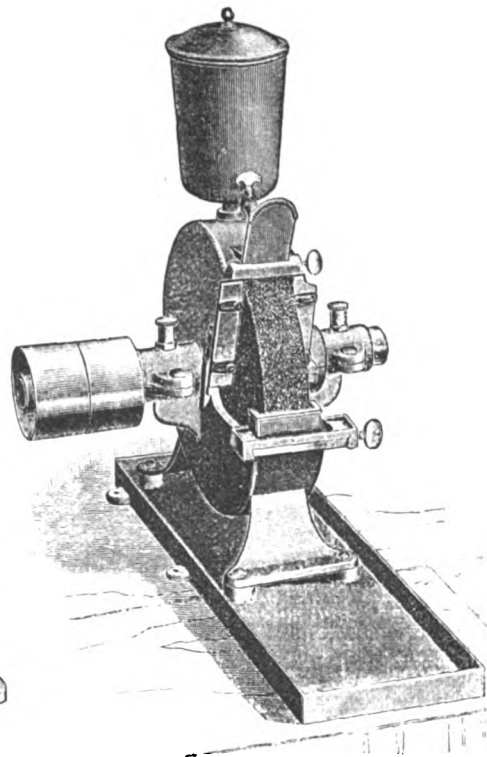


Fig. 2530.

Base, 22x12 ins.; speed, 700 to 900 revolutions.  
 With 10x1 inch wheel, single or double pulleys ..... each, \$25.00  
 With 10x2 inch wheel, single or double pulleys ..... each, 30.00  
 Countershaft extra ..... " 12.00

## WATER GRINDING ATTACHMENT.

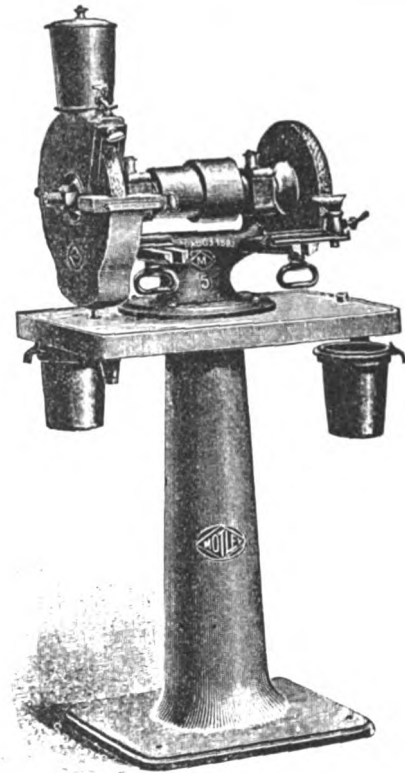


Fig. 2531.

Cut shows Attachment applied to a No. 5 Machine.

Attachment only for No. 3 Machine..each, \$12.50  
 " " 4 " .. " 15.00  
 " " 5 " .. " 15.00

## COMBINATION GRINDING MACHINE.

With Tool and Reamer Grinding Attachments.

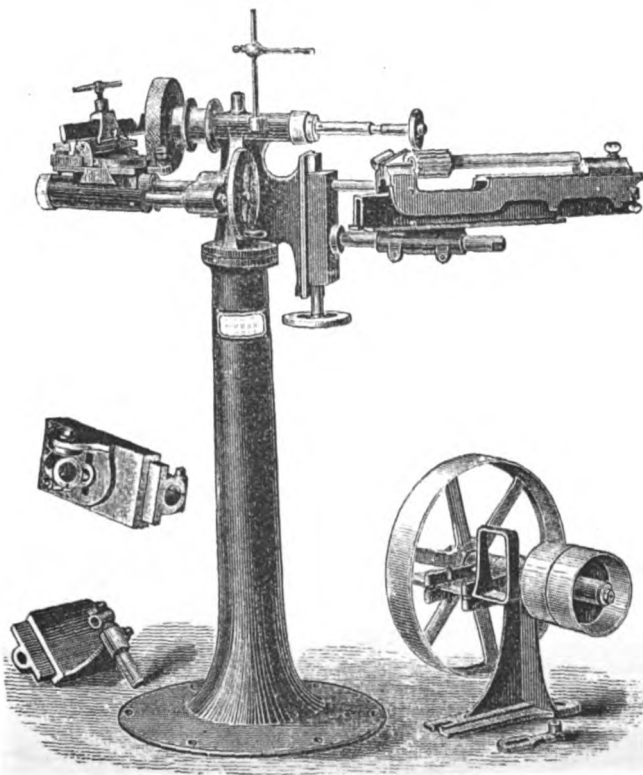


Fig. 2532.

## TWIST DRILL GRINDING MACHINE.

With Mill and Shell Reamer Grinding Attachment.

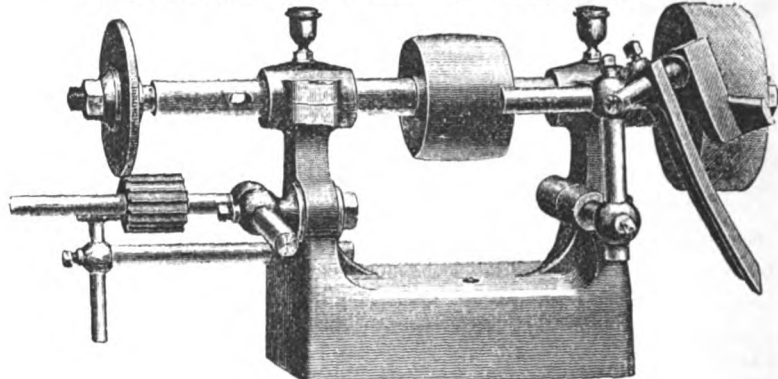


Fig. 2533.

No. 1, for sizes to 1/2 inch, including emery wheel.....each, \$11.00  
 No. 2, for sizes 3/8 to 2 inches, with one emery wheel, and without mill attachment.....each, 34.00  
 No. 2 1/2, for sizes 3/8 to 2 inches, with mill attachment and emery wheels..... " 48.00

### Description and Price, Combination Grinding Machine, Fig. 2532.

This machine, with its different attachments, is adapted for sharpening by grinding, milling machine cutters with straight, spiral, beveled, radial or disc teeth, reamers long or short shanked, either straight-toothed, spiral or taper; also the grinding of threading tools to the proper angle, and the extensive variety of work of this class usual to tool room or general shop. The arbor is of steel, has good length of bearings, which are most thoroughly protected from grit or dust. The pulley on arbor is 2 1/2 inches diameter, 1 3/8 inches face, and should run from 2500 to 3000 revolutions per minute.

Complete, as per cut.....each, \$140.00



## GRINDERS AND BUFFING LATHES.

## FRICTION DRIVEN CENTER GRINDER.

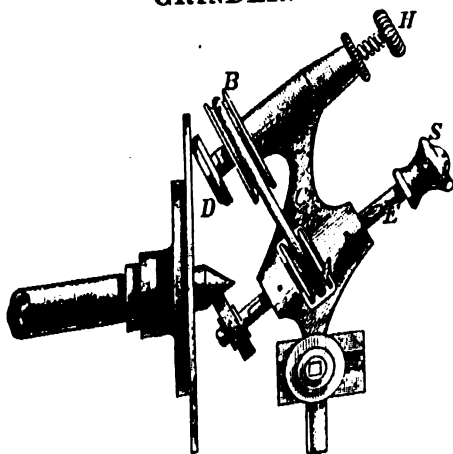


Fig. 2534.

This Grinder can be easily attached to any lathe, and will true up centers more quickly than they can be annealed, turned and hardened.

It will also grind up centers when cut or broken. The hub of the sheave pulley B runs in the frame C. The friction wheel shaft D slides in and out of sheave wheel hub B. The sheave wheel A is fastened to a sleeve in which slides the emery wheel spindle E. The emery wheel is moved in and out by the knob S, which is a running fit, so that it does not revolve with emery wheel spindle. The sleeve and shafts are made of steel, and frame of malleable iron. Face of friction wheel is covered with vulcanized fibre.

No. 1, for lathes to 20 inches, shank, 1 1/2 x 1 inch ..... each, \$12.00  
No. 2, for large lathes, shank 2 x 1 1/4 inches ..... each, 15.00

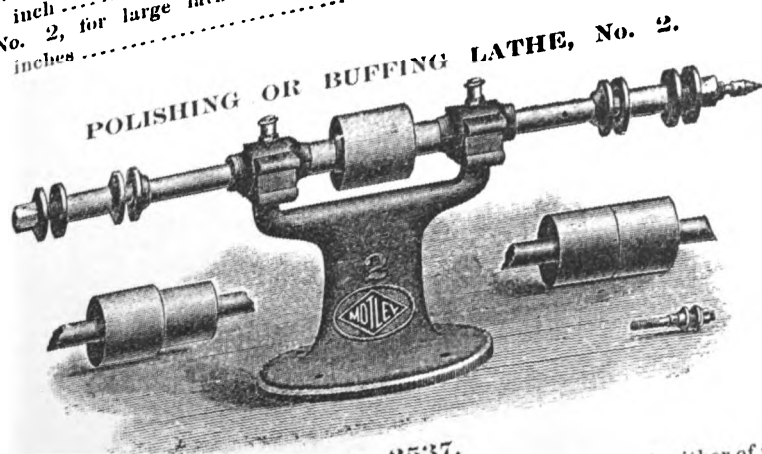


Fig. 2537.

The cut shows lathe with spindle C. It can be furnished with either of the spindles as shown in cut, Fig. 2538. The cast iron boxes have a bearing on the spindle four inches in length, with hardened steel cap screw. Patent oil cups are furnished. A taper attachment is shown which screws into the end of spindle. A small arbor is also made to fit where taper screw is used, and is extra.

Length of spindle ..... 36 inches.  
Height from base to center of spindle ..... 12 "  
Diameter of spindle in boxes ..... 1 1/4 "  
Diameter of spindle between flanges ..... 1 "  
Length of bearings ..... 4 "

## Prices, including Taper Attachment.

	Each.		Each.
No. 2A, single pulley	\$20.00	No. 2F, tight and loose pulleys	\$27.50
" 2B, "	22.50	" 2G, cone pulley	25.00
" 2C, "	25.00	" 2H, "	27.50
" 2D, tight and loose pulleys	22.50	" 2I, "	30.00
" 2E, "	25.00	Small arbor extra	2.50

## AUTOMATIC TWIST DRILL GRINDER.

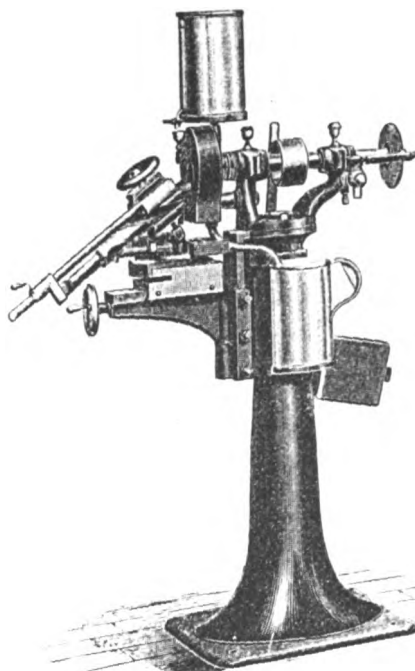


Fig. 2535.

This machine is adapted for grinding to a proper angle and with a suitable clearance the cutting lips of twist drills. It may be adjusted to give a greater or less angle to the cutting lips, as well as more or less clearance. It is arranged for drills 1/2 to 2 inches diameter. With extra jaws smaller drills to 1/4 inch can be ground.

Complete, with emery wheel ..... each, \$160.00

## HAND DRIVEN CENTER GRINDER.

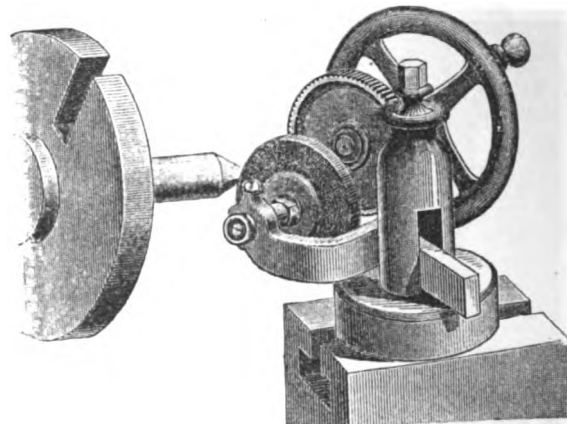


Fig. 2536.

This machine is designed for grinding centers after hardening. It is as readily applied to its work as the ordinary turning tool. The arbor runs in sliding boxes which allow sufficient end play for wheel to traverse the face of center. The machine is applicable to any size engine lathe and a workman of ordinary skill can true a pair of centers after they have been shaped and hardened in from two to four minutes so perfectly that not the slightest variation can be detected. Lathe centers should be turned exact to gauge, then hardened and ground true with the machine.

Complete, with emery wheel ..... each, \$12.00

## STEEL SPINDLES FOR BUFFING LATHES.

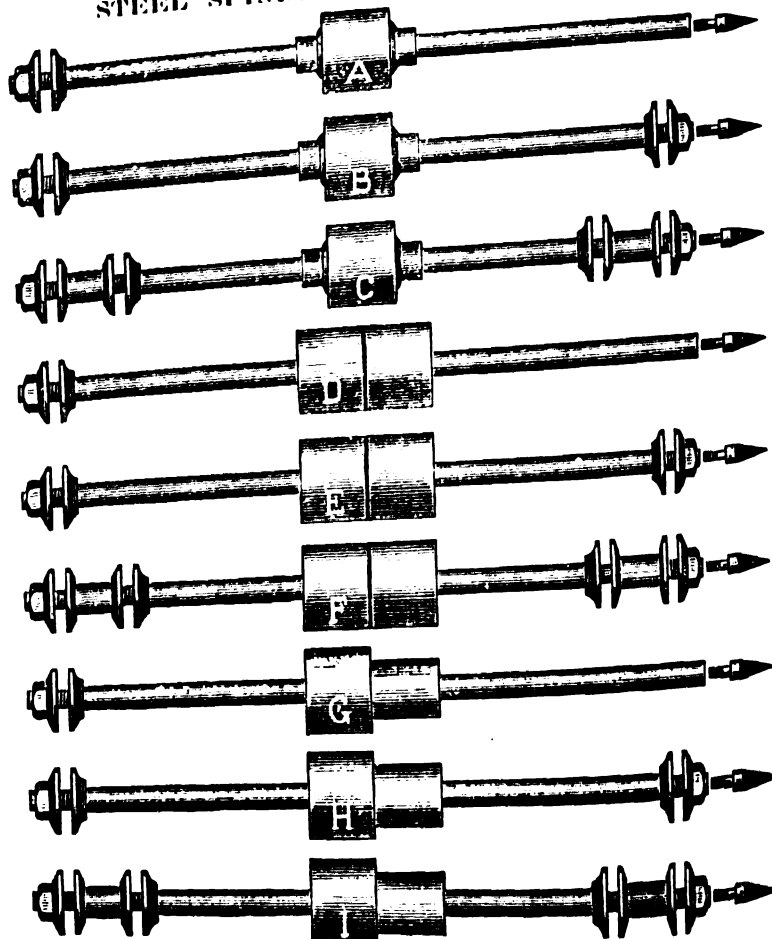


Fig. 2538.



# BUFFING LATHES AND POLISHING SUPPLIES.

POLISHING OR BUFFING LATHE, No. 3.

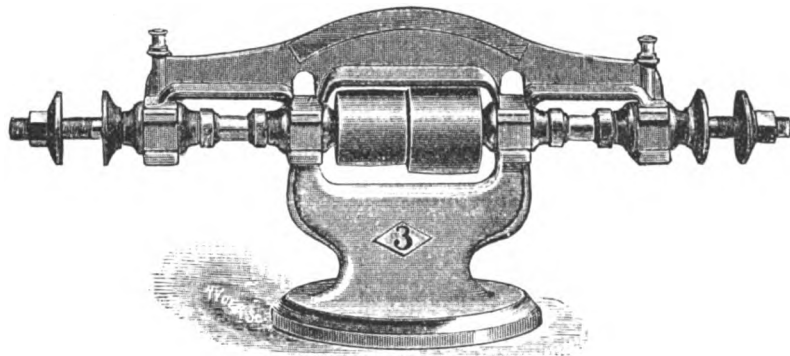


Fig. 2539.

Shown with Spindle H.

Spindle is 52 inches long, 1 1/4 inches diameter between flanges, stands 12 inches high. Weight of machine, as shown, 175 lbs. Boxes are made in halves and set into frame of the head, as in an engine lathe.

Complete, with spindle shown and single pulley .....	each, \$48.00
" " " " tight and loose pulley .....	" 53.00
" " " " cone pulley .....	" 53.00

POLISHING OR BUFFING LATHE, No. 1.

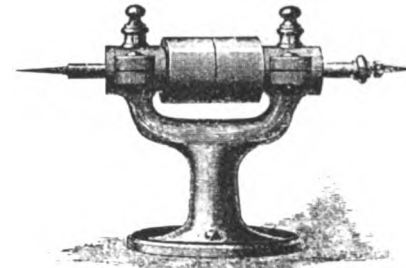


Fig. 2540.

Stands 8 inches high, has cast iron boxes 2 inches long, with caps planed to fit frame, and set screws for taking up wear. Size of base, 5x8 inches; spindle, 18 inches long, 3/4 inch diameter outside of boxes, 1/2 inch between flanges.

With spindle shown and double pulley .....	each, \$12.00
" " " single " .....	" 10.00

## STANDARD POLISHING OR BUFFING HEAD.

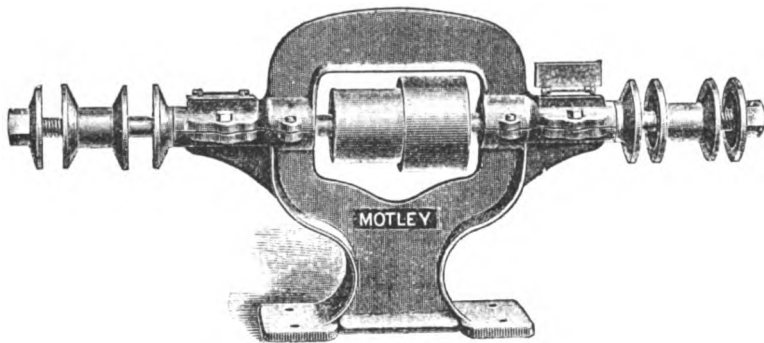


Fig. 2541.

Length of spindle .....	36 inches.	Size of base .....	13x6 inches.
Height base to center of spindle .....	10 "	Length of bearings .....	4 1/2 "
Diam. of spindle in boxes .....	1 1/8 "	Size of single pulley .....	4x4 "
" " between flanges .....	1 "	Size of cone .....	5x4x3 1/2 "

### Prices, Complete with Spindle Shown.

No. C, single pulley .....	each, \$20.00	No. F, tight and loose pulley .....	each, \$22.50
No. I, cone pulley .....	each, \$25.00		

## IRON COLUMN FOR No. 2 LATHE.



Fig. 2542.

This column with table is used for mounting No. 2 Polishing Lathe, Fig. 2537.

Height from base to top of table .....	34 inches.
Size of table, 25x14 inches; weight ..	160 lbs.
Complete, as per cut .....	each, \$15.00

## BELT STRAPPING ATTACHMENT.

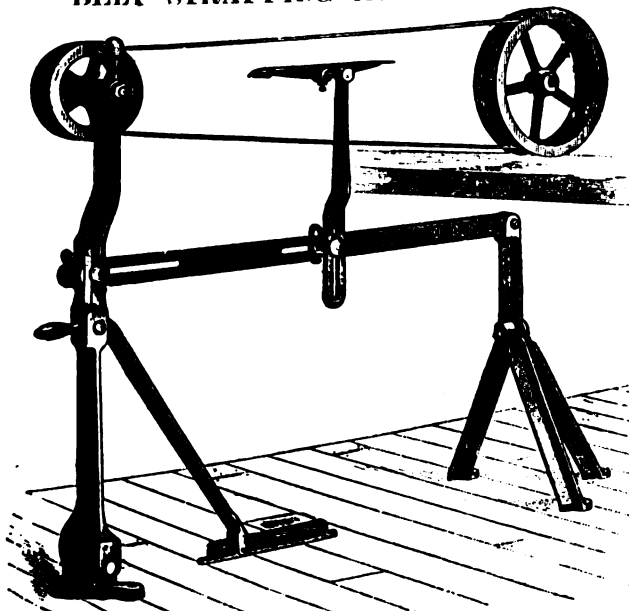


Fig. 2543.

### Description and Price, Belt Strapping Attachment.

Fig. 2543.

Can be attached to any grinder or polishing machine. It has two flanged pulleys, 12 and 6 inches diameter, 1 inch hole, 12 1/2 inches between the flanges. The lever is provided with ears that fit into grooves cast in each side of the toothed rack on the floor, thereby keeping it always in place. The flanged pulleys are turned inside and out, and carefully balanced to run true.

Complete, as per cut, except belt .....	each, \$25.00
---	---------------

## POLISHING SUPPLIES.

Endless Emery Polishing Belts, Cotton Polishing Belts, Wooden Polishing and Buffing Wheels, Best Oak Tanned Leather, Bull Neck Walrus or Sea-horse Leather, Muslin Polishing Buffs, Felt Polishing Buff Wheels, Wheel and Scrub Brushes, Pure Turkish Emery, Corundum, Quartz, Crocus, Composition, Tripoli, Rouge, Vienna Lime, Pumice Stone, Brick Dust, Putty Powder or Oxide of Tin, Rotten Stone, etc.

Special prices on application.

## SPRING BALANCES AND SCALES.

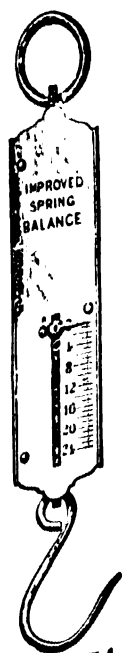
STRAIGHT SPRING  
BALANCE.

Fig. 2544.

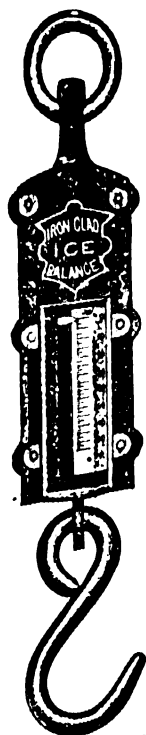
IRON CLAD  
ICE BALANCE.

Fig. 2545.

## Prices, Straight Spring Balances.

WITH HOOK, FIG. 2544.			
No. 2000,	24 lbs. by 1 1/2 lb.	per doz.,	\$1.50
" 30,	48 " " 1 1/2 " heavy.	"	3.50
" 30 1/2,	12 " " 1 1/2 " heavy.	"	4.00
" 40,	24 " " 1 1/2 " heavy.	"	4.00
" 50,	30 " " 1 1/2 " heavy.	"	5.00
" 60,	40 " " 1 1/2 " heavy.	"	18.00
" 70,	50 " " 1 1/2 " heavy.	"	10.00

WITH ROUND PAN.			
No. 31 1/2,	12 lbs. by 1 1/4 lb.	per doz.,	\$7.00
" 41,	24 " " 1 1/4 " heavy.	"	7.00
" 51,	30 " " 1 1/4 " heavy.	"	8.50
" 61,	40 " " 1 1/4 " heavy.	"	28.00

## Prices, Iron Clad Ice Balances.

Compact and durable, and not liable to get out of order.			
No. 150,	200 lbs. by 5 lbs.	per doz.,	\$60.00
" 160,	300 " " 5 " heavy.	"	72.00
" 170,	400 " " 5 " heavy.	"	84.00

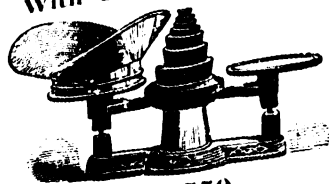
EVEN BALANCE SCALE.  
With Two Iron Plates.

Fig. 2550.

## Prices, Complete with Weights.

No.	Capacity	Each.
0,	1/2 oz. to 16 lbs., with brass scoop.	\$12.00
1,	1 1/2 " " 10 " " " "	9.50
2,	2 1/2 " " 6 " " " "	7.75
3,	3 1/2 " " 2 " " " "	6.50
10,	10 1/2 " " 16 " with tin scoop.	11.00
11,	11 1/2 " " 10 " " " "	8.50
12,	12 1/2 " " 6 " " " "	7.00
13,	13 1/2 " " 2 " " " "	5.75
20,	20 1/2 " " 16 " without scoop.	9.50
21,	21 1/2 " " 10 " " " "	7.00
22,	22 1/2 " " 6 " " " "	6.00
23,	23 1/2 " " 2 " " " "	5.00

Above Scales made with brass side beams when so desired.

Spring Balances and Scales graduated according to French, Spanish, or any other system desired, at a small extra charge.

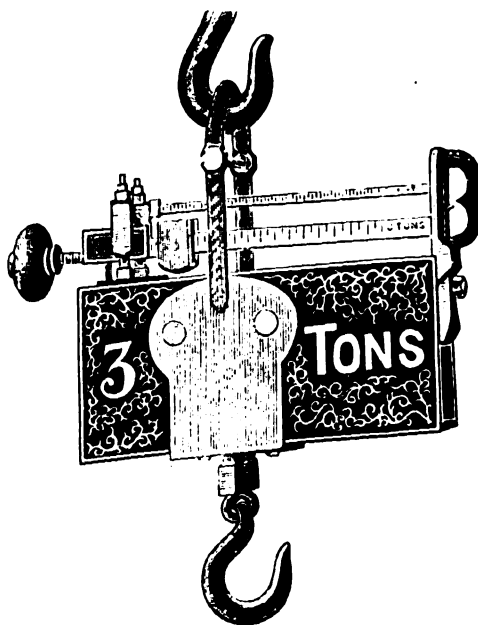
SUSPENDED WEIGHING  
MACHINE.

Fig. 2546.

This machine is constructed upon the compound lever principle, of the best forged iron and steel. It is used for weighing all kinds of goods during removal from ships, canal boats, railway cars, warehouses, etc., by hanging it to the crane hook, converting the same into a weighing crane. Very useful in iron or steel furnaces, as the machines are not injured by the heat.

Capacity,	1 1/2 oz.	1 1/4 "	1 1/2 "	2 "	2 1/2 "
Cap. tons. 1/2	90.00	100.00	120.00	140.00	160.00
Each. \$20.00	1.00	1.00	1.00	1.00	1.00
Cap. tons. 3	220.00	260.00	300.00	330.00	390.00
Each. \$120.00	2.00	2.00	2.00	2.00	2.00
Cap. tons. 20	500.00	580.00	700.00	1100.00	1380.00
Each. \$440.00	4.00	4.00	4.00	4.00	4.00

## LETTER BALANCE.



Fig. 2549.

Capacity, 1/2 oz. to 8 ozs.	each, \$3.00
" 1 1/2 " " 12 " "	" 4.00
" 1 1/2 " " 32 " "	" 6.00

## PACKAGE BALANCE.

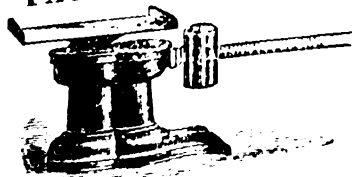


Fig. 2551.

Capacity, 1 oz. to 68 ozs.	each, \$8.00
----------------------------	--------------

## Prices, with Double Beam.

Capacity, 1/2 oz. to 64 ozs.	each, \$ 8.00
" 1 1/2 " " 96 " "	" 12.00

## EXPRESS SCALE.

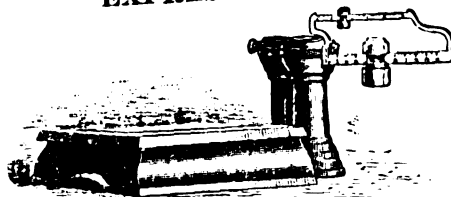


Fig. 2553.

For weighing packages, entire capacity on beam. Capacity, 1/2 oz. to 60 lbs. each, \$20.00

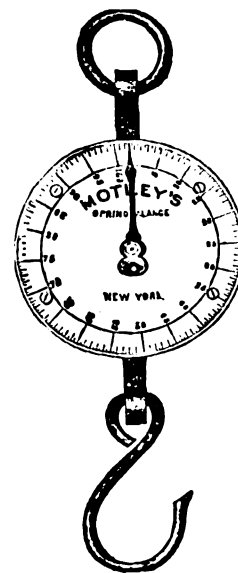
CIRCULAR WARE-  
HOUSE BALANCE.

Fig. 2547.

LOCOMOTIVE  
BALANCE.

Fig. 2548.

## Prices, Circular Warehouse Balances.

No.	Capacity	Each.
No. 300,	100 lbs. by 1 1/2 lb.	\$7.00
" 310,	150 " " 1 1/2 " heavy.	8.00
" 320,	200 " " 1 " heavy.	10.00
" 330,	250 " " 1 " heavy.	11.00
" 340,	300 " " 1 " heavy.	12.00
" 350,	400 " " 1 " heavy.	15.00
" 360,	500 " " 1 " heavy.	20.00

Prices, Spring Balances for Safety  
Valves.

## ASHCROFT'S BALANCES.

Portable Engine.	each, \$6.00
Locomotive.	" 12.00

## TUBULAR LOCOMOTIVE BALANCES, FIG. 2548.

Capacity	Each.
50 lbs., figured to order.	\$75.00
75 " " " " "	100.00
80 " " " " "	125.00
84 " " " " "	125.00
96 " " " " "	130.00
100 " " " " "	130.00
150 " " " " "	144.00
200 " " " " "	188.00

EVEN BALANCE SCALE.  
With One Iron Plate and Fork.

Fig. 2552.

## Prices, Complete with Weights.

No.	Capacity	Each.
No. 0,	1/2 oz. to 16 lbs., with brass scoop.	\$11.50
1,	1 1/2 " " 10 " " " "	9.00
2,	2 1/2 " " 6 " " " "	7.50
3,	3 1/2 " " 2 " " " "	6.25
10,	10 1/2 " " 16 " tin scoop.	10.50
11,	11 1/2 " " 10 " " " "	8.00
12,	12 1/2 " " 6 " " " "	6.75
13,	13 1/2 " " 2 " " " "	5.75

The above Scales are made without brass side beam when so desired. Funnel Scoops furnished with above scales when so ordered at a small extra charge.

SCALES.

HATCH  
TEA SCALE.

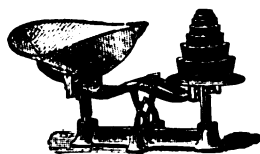


Fig. 2554.

Capacity  $\frac{1}{2}$  oz. to 4 pounds.  
No. 161, japanned, with tin scoop per doz., \$15.00  
" 162, gold bronzed, " " " 17.00

Hatch Counter Scales.

Larger than Fig. 2554, and with platform for scoop.

Capacity,  $\frac{1}{2}$  oz. to 8 pounds.  
No. 171, japanned, with tin scoop per doz., \$36.00  
" 172, painted red, " " " 40.00

PLATFORM COUNTER SCALE.

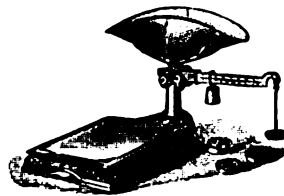


Fig. 2555.

Each.  
No. 0, capacity 240 lbs., japanned ..... \$4.68  
" 2, " 240 " striped in bronze. 5.00  
" 1, " 240 " " " 5.40  
with steel bearings..... 5.40  
No. 3, capacity 244 lbs., painted red, striped  
in bronze, with steel bearings..... 5.60

Double Beam Platform Scales.

No. 5, capacity 244 lbs., japanned, striped in  
bronze, with steel bearings.....each, \$6.80

GROCERS' AND DRUGGISTS'  
SCALE.

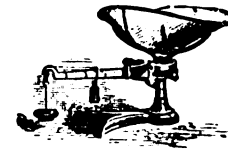


Fig. 2556.

Each.  
No. 31, capacity  $\frac{1}{2}$  oz. to 36 lbs., tin scoop \$5.00  
" 32, "  $\frac{1}{2}$  " " 62 " " 6.00  
" 33, "  $\frac{1}{2}$  " " 62 " brass scoop 7.50  
" 34, "  $\frac{1}{2}$  " " 62 " tin scoop 7.00  
and double beam..... 7.00  
No. 35, capacity  $\frac{1}{2}$  oz. to 62 lbs., with brass  
scoop and double beam..... 8.50

Druggists' Scales.

No. 40, capacity 1 dr. to 8 lbs., with tin scoop \$6.00  
" 41, " 1 " 8 " " brass " 7.00

PORTABLE PLATFORM SCALE.  
With Wheels.

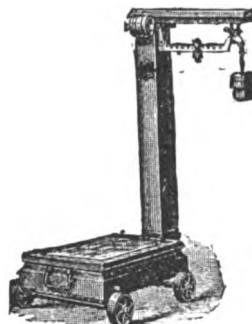


Fig. 2557.

Nos.	Capacity.	Size of Platform.	Each.
4	2500 lbs.	23 ins. x 32 ins.	\$85.00
5	2000 "	23 " x 32 "	75.00
6	1500 "	21 " x 30 "	60.00
7	1200 "	19 " x 28 "	48.00
8	1000 "	17 " x 26 "	43.00
8 <sup>1</sup> / <sub>2</sub>	800 "	17 " x 24 "	38.00
9	600 "	16 " x 24 "	33.00
10	400 "	15 " x 22 "	26.00

Prices, Fig. 2557, without Wheels.

Nos.	4	5	6	7	8	8 <sup>1</sup> / <sub>2</sub>	9	10
Each	\$80.00	70.00	55.00	44.00	39.00	34.00	30.00	23.00

PORTABLE PLATFORM SCALE.  
With Drop Lever.

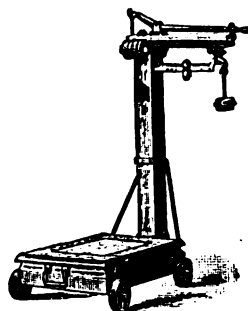


Fig. 2558.

Nos.	Capacity.	Size of Platform.	Each.
1	4000 lbs.	32 ins. x 40 ins.	\$140.00
2	3500 "	32 " x 40 "	130.00
4	2500 "	23 " x 32 "	94.00
5	2000 "	23 " x 32 "	85.00
6	1500 "	21 " x 30 "	69.00
7	1200 "	19 " x 28 "	56.00
8	1000 "	17 " x 26 "	50.00

The above scales have the patent drop lever, which raises the platform entirely off from working parts of scale while it is being loaded.

PORTABLE PLATFORM SCALE.  
With Pillar Guard.

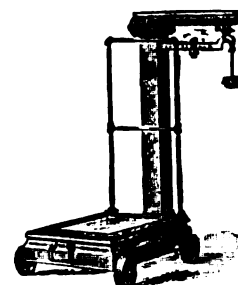


Fig. 2559.

Nos.	Capacity.	Size of Platform.	Each.
4	2500 lbs.	23 ins. x 32 ins.	\$90.00
5	2000 "	23 " x 32 "	80.00
6	1500 "	21 " x 30 "	64.00
7	1200 "	19 " x 28 "	52.00
8	1000 "	17 " x 26 "	47.00
8 <sup>1</sup> / <sub>2</sub>	800 "	17 " x 24 "	42.00
9	600 "	16 " x 24 "	36.00
10	400 "	15 " x 22 "	29.00

The above scales, with pillar guard, are especially designed for export.

PORTABLE PLATFORM SCALES.  
With Solid Iron Platform.

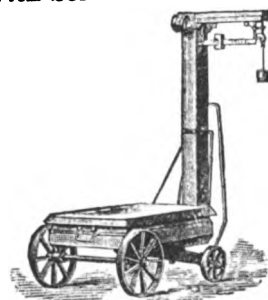


Fig. 2560.

With solid iron platform, high open wheels and vibratory axle.

Nos.	Capacity.	Size of Platform.	Each.
4	2500 lbs.	23 ins. x 32 ins.	\$100.00
6	1500 "	21 " x 30 "	84.00
7	1200 "	19 " x 28 "	68.00

Prices, Fig. 2560, with Patent Drop Lever.

The lever raises the platform entirely off from working parts of scale while it is being loaded.

Nos.	4	6	7
Each	\$115.00	94.00	78.00

Scales graduated according to French, Spanish, or any other system desired, at a small extra charge.

WHEELBARROW SCALE.

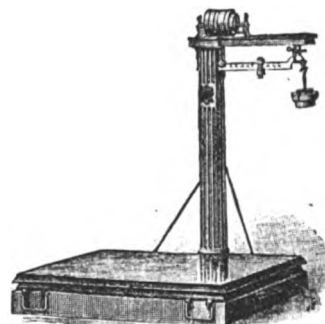


Fig. 2561.

Made entirely of metal.

Nos.	Capacity.	Size of Platform.	Each.
3	1000 lbs.	30 ins. x 43 ins.	\$70.00
5	1500 "	30 " x 43 "	80.00

Prices, with Wheels.

Nos.	Capacity.	Size of Platform.	Each.
2	1000 lbs.	30 ins. x 43 ins.	\$75.00
4	1500 "	30 " x 43 "	85.00

Prices, Ore Scales.

Similar to Fig. 2561. Extra heavy, with wheels.  
No. 4, capacity 2500 lbs., platform 35x44 inches.....each, \$130.00

ROLLING MILL OR IRON SCALE.



Fig. 2562.

With rubber spring platform and vibratory axle.

Nos.	Capacity.	Size of Platform.	Each.
1	4000 lbs.	32 ins. x 40 ins.	\$160.00
4	2500 "	23 " x 32 "	125.00
6	1500 "	21 " x 30 "	100.00

Prices, Extra Heavy, without Drop Lever.

Nos.	Capacity.	Size of Platform.	Each.
3	6000 lbs.	34 ins. x 40 ins.	\$185.00
7	8000 "	34 " x 40 "	210.00
9	10000 "	34 " x 40 "	225.00

## SCALES.

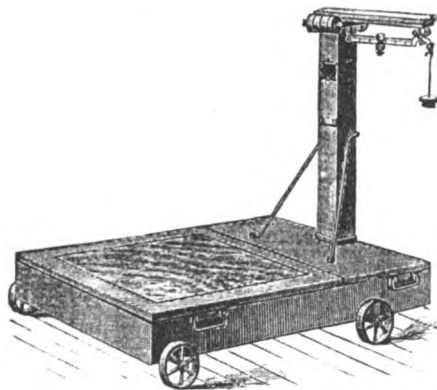
PORTABLE  
WAREHOUSE SCALE.

Fig. 2563.

Nos.	Capacity.	Size of Platform.	Each.
1	5000 lbs.	48 ins. x 48 ins.	\$185.00
3	3500 "	43 " x 45 "	125.00
4	2500 "	35 " x 38 "	105.00
5	2000 "	28 " x 36 "	78.00

## Prices, without Wheels.

Same capacity and size as above.

Nos.	1	3	4	5
Each	\$170.00	110.00	95.00	68.00

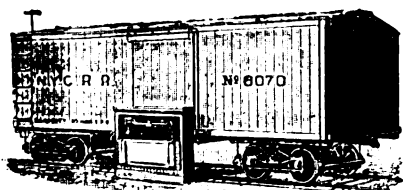
IMPROVED  
RAILROAD TRACK SCALE.

Fig. 2567.

Nos.	Capacity.	Length of Platform.	Each.
1	100 tons	110 feet	\$2800.00
2	90 "	100 "	2500.00
3	75 "	76 "	2100.00
4	65 "	66 "	1800.00
5	50 "	55 "	1450.00
6	50 "	45 "	1100.00
7	50 "	34 "	1050.00
8	40 "	42 or 45 "	1050.00
9	50 "	36 "	1050.00
10	40 "	36 "	1000.00
11	30 "	36 "	950.00
12	40 "	34 "	950.00
13	40 "	32 "	950.00
14	30 "	34 "	875.00
15	30 "	32 "	875.00
16	20 "	22 "	600.00
17	10 "	12 "	350.00

## Prices, Narrow Gauge Track Scales.

Nos.	Capacity.	Length of Platform.	Each.
18	20 tons	20 feet	\$575.00
19	25 "	22 "	625.00
20	25 "	24 "	680.00
21	25 "	30 "	750.00
22	30 "	32 "	850.00

The prices given above do not include timber or foundation.

Triple Beams, extra.....each, \$25.00  
Pillars and Cap " ..... " 60.00

## PORTABLE CART SCALES.

No.	Capacity.	Size of Platform.	Each.
2	4000 lbs.	4 ft. x 6 ft.	\$150.00

This price does not include the inclines necessary to use for driving on and off platform.

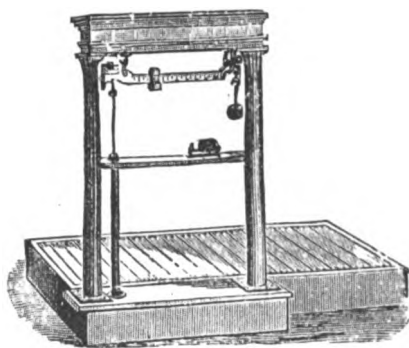
RAILROAD  
BAGGAGE SCALE.

Fig. 2564.

This is a portable scale, having a large platform and contained in a box, which can be set in or on the floor of depot or platform.

No.	Capacity.	Size of Platform.	Each.
9	2000 lbs.	4 ft. x 6 ft.	\$125.00

## RAILROAD DEPOT SCALE.

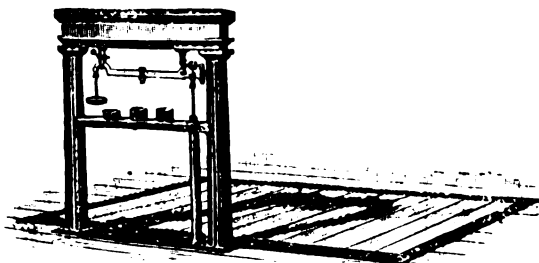


Fig. 2566.

Nos.	Capacity.	Size of Platform.	Each.
1	6 tons.	9 ft. x 10 ft.	\$280.00
2	6 "	4 " x 6 "	250.00
3	4 "	7 " x 9 "	230.00
4	3 "	6 " x 8 "	215.00
5	3 "	5 " x 6 "	200.00
6	2 "	5 " x 6 "	175.00
Double Beams for above, extra. ....			8.00

Above prices are exclusive of timber and foundation.

## SUGAR CANE SCALE.

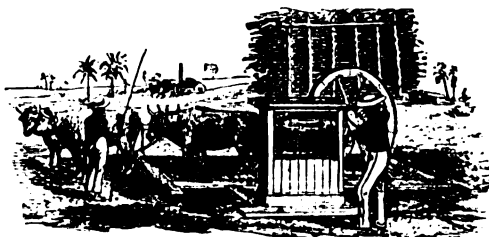


Fig. 2569.

This Scale is designed especially for plantations, and is well built in every particular.

## Price, Complete with Timber.

No.	Capacity.	Size of Platform.	Each.
0	10 tons	9 ft. x 18 ft.	\$100.00

Adjusted to any standard.

## PLANTATION RAILWAY SCALES.

## Prices, Complete with Timber.

Nos.	Capacity.	Size of Platform.	Each.
2	25 tons	53 feet long	\$920.00
4	25 "	42 " "	850.00
6	25 "	31 " "	800.00
8	20 "	30 " "	700.00
10	20 "	28 " "	650.00
12	20 "	26 " "	600.00
14	20 "	24 " "	500.00

These Scales are for weighing cars loaded with sugar cane, and are not designed for locomotives to pass over.

DORMANT  
WAREHOUSE SCALE.

Fig. 2565.

Nos.	Capacity.	Size of Platform.	Each.
1	5000 lbs.	48 ins. x 48 ins.	\$170.00
2	4000 "	48 " x 48 "	155.00
3	3500 "	43 " x 45 "	125.00
4	2500 "	38 " x 46 "	115.00
5	2500 "	36 " x 38 "	105.00

Brass Counterpoises and weights, or scales with compound beams, requiring no weights, furnished to order at special prices.

## HAY OR WAGON SCALE.

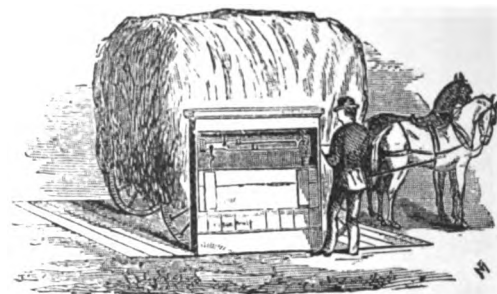


Fig. 2568.

Nos.	Capacity. Tons.	Size of Platform. Feet.	Edge of Platform to Beam Rod.	Each.
1	20	8x22	2 ft. 4 ins.	\$450.00
2	15	8x22	2 " 4 "	400.00
3	15	8x20	2 " 4 "	400.00
4	10	8x22	2 " 4 "	330.00
5	10	8x20	2 " 4 "	330.00
6	10	8x18	2 " 4 "	315.00
7	10	8x16	2 " 4 "	315.00
8	10	8x15	2 " 4 "	300.00
9	10	8x14	2 " 4 "	300.00
10	8	8x22	2 " 4 "	300.00
11	8	8x20	2 " 4 "	300.00
12	8	8x18	2 " 4 "	285.00
13	8	8x16	2 " 4 "	285.00
14	8	8x15	2 " 4 "	270.00
15	8	8x14	2 " 4 "	270.00
16	6	8x22	2 " 4 "	275.00
17	6	8x20	2 " 4 "	275.00
18	6	8x18	2 " 4 "	250.00
19	6	8x16	2 " 4 "	250.00
20	6	8x15	2 " 4 "	225.00
21	6	8x14	2 " 4 "	225.00
22	5	8x15	2 " 0 "	200.00
23	5	8x14	2 " 0 "	200.00
24	4	8x22	2 " 4 "	225.00
25	4	8x14	2 " 0 "	165.00
26	3	8x14	2 " 0 "	145.00

These Scales require a total depth of only 16 to 24 inches. The cost of preparing foundations is less than that of other makes. Timber, work and foundations for any of above Scales to be furnished by the purchaser.

Pillars and Cap, 3, 4 and 5 tons....extra, \$50.00  
Pillars and Cap, 6, 8 and 10 tons... " 60.00  
Triple Beam, requiring no weights.. " 30.00

# SCALE BEAMS, WEIGHMASTERS' FRAMES, ETC.

## WEIGHMASTERS' FRAME.

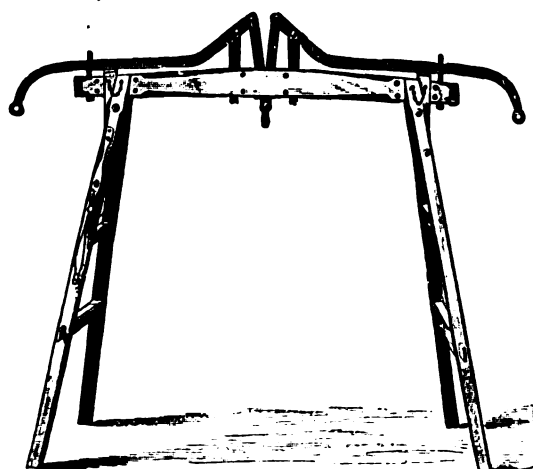


Fig. 2570.

Capacity, pounds.....	800	1000	1200	1500	2000
Single Lever.....each,	\$23.00	24.00	29.00	30.00	35.00
Double ".....each,			35.00	35.00	42.00
Capacity, pounds.....	2500	3000	4000	5000	6000
Single Lever.....each,	\$39.00	44.00			
Double ".....each,	46.00	49.00	60.00	70.00	90.00
Chain down hauls for end of lever.....each,					\$2.00

## WEIGHMASTERS' SCALE BEAM.

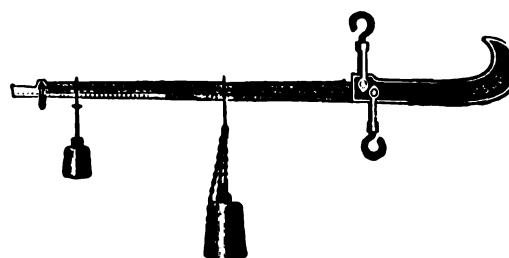


Fig. 2571.

Capacity, pounds.....	100	150	200	250	300
Best Japanned.....each,	\$ 7.00	7.50	8.00	8.50	9.00
Polished.....each,	11.00	11.50	12.00	12.50	13.00
Capacity, pounds.....	400	500	600	700	800
Best Japanned.....each,	\$12.50	14.00	15.50	19.00	22.00
Polished.....each,	16.50	18.50	20.00	24.00	27.00
Capacity, pounds.....	1000	1200	1500	2000	2500
Best Japanned.....each,	\$24.50	27.00	32.00	41.00	48.00
Polished.....each,	30.00	33.00	40.00	50.00	58.00
Capacity, pounds.....	3000	3500	4000	5000	
Best Japanned.....each,	\$55.00	60.00	66.00	83.00	
Polished.....each,	67.00	72.00	82.00	105.00	

## SPECIAL BEAMS.

Sugar, Turpentine, Butcher, Taring, Grain Weighers', Mineral and Brass Beams.  
Prices on application.

## COMPOUND BEAM FOR CRANES.

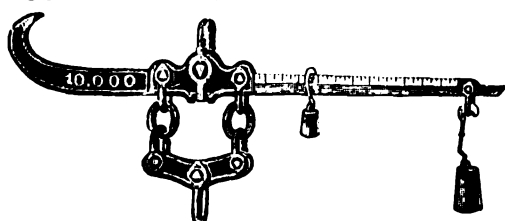


Fig. 2572.

Capacity, pounds.....	1000	2000	3000	4000	5000	6000
Each.....	\$52.00	62.00	75.00	83.00	90.00	97.00
Capacity, pounds.....	7000	8000	10000	12000	15000	20000
Each.....	\$104.00	110.00	125.00	150.00	175.00	200.00

## COMMON SCALE BEAM.

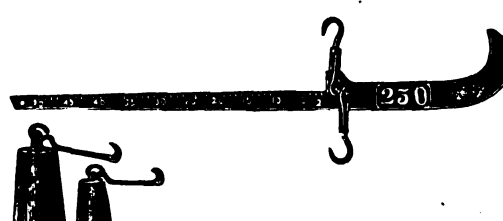


Fig. 2573.

Capacity, pounds.....	100	150	200	250	300	360	400
Each.....	\$1.50	1.50	1.60	1.90	2.10	2.50	2.90
Capacity, pounds.....	450	500	600	700	800	1000	1200
Each.....	\$3.20	3.50	4.00	4.66	5.30	6.66	8.00

## HOISTING AND WEIGHING HOOKS.

### Box Hook.



Fig. 2574.

### Box Hook.

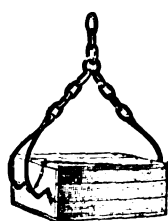


Fig. 2575.

### Barrel Hook.



Fig. 2576.

### Hogshead Hook.

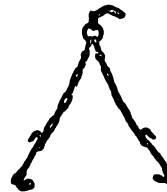


Fig. 2577.

### Cotton Hook.



Fig. 2578.

## Prices, Box Hooks, Figs. 2574 and 2575.

No. 1, large size, with chain, Fig. 2574.....	Each. \$5.50
" 2, common pattern, Fig. 2575.....	4.50

## Prices, Barrel Hooks, Fig. 2576.

No. 3, ordinary size, for barrels.....	Each. \$4.00
" 4, large size, for tierces.....	5.00

## Prices, Hogshead Hooks, Fig. 2577.

No. 5, light, with swivels.....	Each. \$10.00
" 6, heavy ".....	11.00

## Prices, Tobacco and Tea Hooks.

Hooks for tobacco boxes, steel.....	Each. \$5.00
" " tea chests, steel.....	5.00

## Prices, Cotton Hooks, Fig. 2578.

No. 7, New York pattern, plain and light.....	Each. \$6.00
" 8, " " " with swivel and chain.....	7.00
" 9, New Orleans pattern.....	8.00

## Prices, Sliding Can Hooks.

Sliding Can Hooks, heavy.....	Each. \$16.50
-------------------------------	---------------

## PIG IRON CRADLES, HIDE AND COFFEE BOTTOMS, Etc.

For holding pig iron, bags of coffee, hides, pork, ham, etc., to weigh same.

### Prices, Pig Iron Cradles.

No. 1, capacity, half ton.....	Each. \$ 80.00
" 2, " " " ".....	100.00

### Prices, Standing Bottoms.

No. 1, 30x36 ins., 2500 to 3000 lbs.....	Each. \$35.00
2, 27x33 " 1500 to 2000 ".....	30.00
3, 24x27 " 1000 to 1200 ".....	25.00
4, 22x26 " 600 to 800 ".....	22.00
5, 20x24 " 300 to 500 ".....	20.00

### Prices, Round Bottoms.

No. 1, 5 feet diameter.....	Each. \$36.00
" 2, 4 1/2 " ".....	32.00
" 3, 4 " ".....	28.00

### Prices, Square Bottoms Hung with Chains.

No. 1, 4 feet square.....	Each. \$18.00
" 2, 3 1/2 " ".....	16.00
" 3, 3 " ".....	14.00

### Prices, Folding Coffee Bottoms.

No. 1, 6 ft. 2 ins. long, 2 ft. 4 ins. wide.....	Each. \$45.00
" 2, 5 " 10 " " 2 " 2 " ".....	40.00

### Prices, Plain Coffee Bottoms.

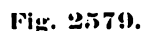
No. 1, 6 ft. long, 2 ft. 4 ins. wide.....	Each. \$40.00
" 2, 5 ft. 8 ins. long, 2 ft. 2 ins. wide.....	35.00

### Prices, Hide Bottoms, with Folds.

No. 1, 4 ft. long, 2 ft. 2 ins. wide.....	Each. \$75.00
" 2, 3 1/2 ft. long, 2 ft. wide.....	70.00



## BLACK AND TINNED NORWAY IRON RIVETS AND BURRS.



\*Oval or Countersunk Heads, or extra lengths, five cents per 1000 in addition to the above prices.

### BARREL RIVETS.

Sizes.....	1d	2d	3d	4d	5d	6d	Sizes.....	5 lb	6 lb.	7 lb.	8 lb.	10 lb
Heavy, medium and light.....	per lb., \$0.15	.13	.12 $\frac{1}{2}$	.12 $\frac{1}{2}$	.12 $\frac{1}{2}$	.12	Barrel Rivets.....	per lb., \$0.14	.14	.14	.14	.13

FLAT HEAD.

ROSE HEAD.

CONE HEAD.

ROUND HEAD.

COUNTERSUNK HEAD.

COUNTERSUNK OVAL HEAD.

COUNTERSUNK HEAD.

TIRE BLANK.

HAME RIVET.

TRUSS HEAD.

WAGON BOX HEAD.

STEEPLE HEAD.

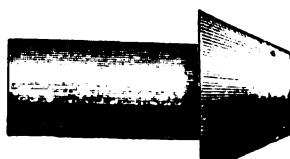
**Fig. 2580.**

Rivets any style head.....		Size of wire, $\frac{1}{16}$ in.	$\frac{3}{16}$ in.	$\frac{1}{2}$ in.	No. 1	No. 2	No. 3	$\frac{1}{2}$ in.	No. 4	No. 5	No. 6	$\frac{3}{8}$ in.	No. 7	No. 8	No. 9	No. 10	No. 11	No. 12	No. 13	No. 14
Iron Rivets,	$\frac{1}{2}$ inch and longer..	per lb.,	\$.0.12	.12	.12	.12 $\frac{1}{2}$	.12 $\frac{1}{2}$	.12 $\frac{1}{2}$	.12 $\frac{1}{2}$	.14	.14	.14	.15	.16	.18	.19	.20	.21	.25	.27
"	$\frac{3}{4}$ inch long .....	"	.12	.12	.12 $\frac{1}{2}$	.12 $\frac{1}{2}$	.12 $\frac{1}{2}$	.12 $\frac{1}{2}$	.12 $\frac{1}{2}$	.14	.14	.14	.15	.16	.18	.19	.20	.22	.24	.27
"	$\frac{7}{8}$ " .....	"		.12	.12 $\frac{1}{2}$	.12 $\frac{1}{2}$	.13	.13	.14	.15	.15	.16	.16	.17	.19	.20	.22	.24	.26	.30
"	$\frac{1}{2}$ " .....	"			.13	.13	.13	.13	.14	.16	.16	.16	.17	.17	.20	.22	.26	.28	.33	.38
"	$\frac{3}{4}$ " .....	"			.13	.13	.14	.14	.15	.16	.17	.17	.17	.18	.20	.23	.27	.29	.34	.40
"	$\frac{7}{8}$ " .....	"				.13	.14	.14	.15	.17	.17	.17	.17	.18	.21	.25	.28	.30	.35	.45
"	$\frac{1}{2}$ " .....	"					.14	.15	.16	.17	.18	.18	.18	.19	.21	.27	.30	.32	.37	.50
"	$\frac{3}{4}$ " .....	"						.15	.16	.18	.18	.18	.19	.19	.21	.28	.31	.34	.39	.52
"	$\frac{7}{8}$ " .....	"						.15	.16	.18	.19	.19	.19	.19	.21	.28	.31	.35	.40	.54
"	$\frac{1}{2}$ " .....	"							.16	.17	.19	.20	.20	.21	.23	.30	.33	.36	.41	.56
"	$\frac{3}{4}$ " .....	"						.16	.17	.19	.20	.20	.22	.22	.25	.33	.37	.41	.45	.58
"	$\frac{7}{8}$ " .....	"							.18	.20	.22	.23	.23	.23	.27	.35	.40	.45	.50	.60
"	$\frac{1}{2}$ " .....	"								.20	.22	.24	.24	.24	.29	.37	.42	.50	.55	.63
"	$\frac{3}{4}$ " .....	"								.21	.23	.25	.25	.25	.30	.38	.45	.55	.60	.65

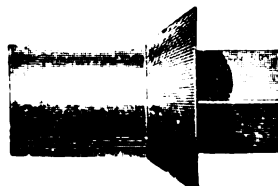
## TINNED IRON TRUNK RIVETS.

Tinned or coppered, any length.								MADE ANY LENGTH.				All made No. 9 gauge.						
Nos.....	7	8	9	10	11	12	13	Size of wire	No. 6	in.	No. 7	No. 8	Length, ins.	1	1½	2	2½	3 and larger.
Per lb....	\$0.25	.26	.27	.28	.30	.35	.38	Per lb.....	\$0.14	.14	.15	.16	Per lb.....	\$0.27	.27	.26	.25	.24
Rivets made from wire smaller than No. 14, all lengths..... per pound, \$0.70																		
Any of the above sizes of Rivets, tinned and not specified, add to prices above..... " .06																		
Oval or Countersunk Head Rivets, or extra lengths extra..... per 1000, .05																		

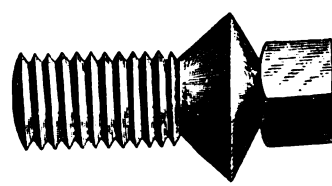
### Round Head.



**Fig. 2581.**



**Fig. 2583.**



**Fig. 2584.**

The iron from which these rivets are made is prepared with especial care in mill, and will be found neutral in nature, of great tensile strength and ductility, and uniform in quality.

These Bolts are made of an extra quality of iron, and furnished either blank or threaded as desired.

**Prices, either style.**

$\frac{1}{4}$ and $\frac{1}{2}$ inch diameter, any length.....	per lb., \$.....
$\frac{3}{4}$ to 1 inch diameter, any length.....	

Prices, Figs. 2583 and 2584.			
Diameter.		Blank.	Threaded.
3/8 inch.....	per 100,	\$1.00	\$1.50
1/2 ".....	"	5.75	6.50
3/4 ".....	"	8.50	9.50
1 ".....	"	12.50	14.00

# MACHINE AND PLOW BOLTS, LAG AND COACH SCREWS.

## MACHINE BOLTS.

Square Head and Nut.

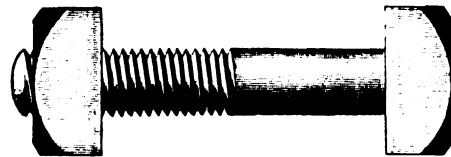


Fig. 2585.

Round Head, Square Nut.

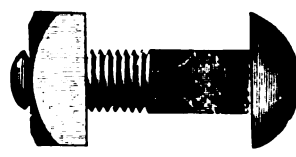


Fig. 2586.

Hexagon Head and Nut.

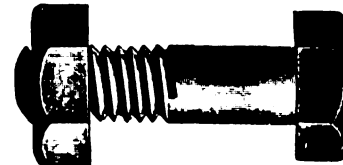


Fig. 2587.

Prices, Machine Bolts with Square Heads and Nuts, Fig. 2585. Per Hundred.

Diam. in. . .	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{8}$	$\frac{1}{2}$	$\frac{5}{8}$ & $\frac{3}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	1
Length under Head, ins.									
1 1/2	\$2.80	\$3.20	\$3.60	\$4.60	\$5.00	\$7.20	\$10.50	\$14.90	\$22.00
2	2.90	3.35	3.80	4.90	5.30	7.70	11.10	15.80	23.10
2 1/2	3.00	3.50	4.00	5.20	5.60	8.20	11.70	16.60	24.20
3	3.10	3.65	4.20	5.50	5.90	8.70	12.30	17.50	25.30
3 1/2	3.20	3.80	4.40	5.80	6.20	9.20	12.90	18.30	26.40
4	3.30	3.95	4.60	6.10	6.50	9.70	13.50	19.20	27.50
4 1/2	3.40	4.10	4.80	6.40	6.80	10.20	14.10	20.00	28.60
5	3.50	4.25	5.00	6.70	7.10	10.70	14.70	20.90	29.70
5 1/2	3.60	4.40	5.20	7.00	7.40	11.20	15.30	21.70	30.80
6	3.70	4.55	5.40	7.30	7.70	11.70	15.90	22.60	31.90
6 1/2	3.80	4.70	5.60	7.60	8.00	12.20	16.50	23.40	33.00
7	3.90	4.85	5.80	7.90	8.30	12.70	17.10	24.30	34.10
7 1/2	4.00	5.00	6.00	8.20	8.60	13.20	17.70	25.10	35.20

Diam. in. . .	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{8}$	$\frac{1}{2}$	$\frac{5}{8}$ & $\frac{3}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	1
Length under Head, ins.									
8	\$4.10	\$5.15	\$6.20	\$8.50	\$8.90	\$13.70	\$18.30	\$26.00	\$36.30
9	6.60	9.10	9.50	14.75	19.50	27.70	38.50		
10	7.00	9.70	10.10	15.75	20.70	29.40	40.70		
11	7.40	10.30	10.70	16.75	21.90	31.10	42.90		
12	7.80	10.90	11.30	17.75	23.10	32.80	45.10		
13				11.90	18.75	24.30	34.50	47.30	
14				12.50	19.75	25.50	36.20	49.50	
15				13.10	20.75	26.70	37.90	51.70	
16				13.70	21.75	27.90	39.60	53.90	
17				14.30	22.75	29.10	41.30	56.10	
18				14.90	23.75	30.30	43.00	58.30	
19				15.50	24.75	31.50	44.70	60.50	
20				16.10	25.75	32.70	46.40	62.70	

Prices, Round Head Machine Bolts, Square or Round under the Head, Fig. 2586.

Same sizes and list prices as Square Heads and Nuts, Fig. 2585.

Prices, Machine Bolts with Hexagon Heads or Hexagon Nuts.

10 per cent. extra.

Prices, Machine Bolts with both Hexagon Heads and Nuts.

20 per cent. extra.

All bolts are cut with United States standard thread, unless otherwise ordered.

## PLOW BOLTS.

No. 1.

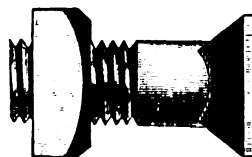


Fig. 2588.

No. 2.

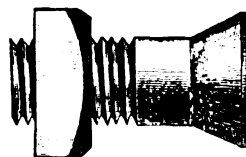


Fig. 2589.

No. 3.

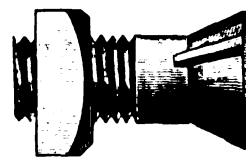


Fig. 2590.

No. 4.

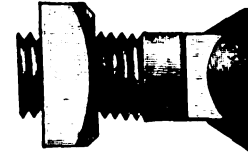


Fig. 2591.

Prices, Plow Bolts, Figs. 2588 to 2591. Per Hundred.

Furnished with right or left hand thread as ordered.

Diam., inch. . .	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$
Length over all, inches.						
1 1/4	\$1.70	\$2.00	\$2.60	\$3.50	\$4.50	\$5.70
1 1/2	1.80	2.10	2.75	3.70	4.75	6.00
1 3/4	1.90	2.20	2.90	3.90	5.00	6.30
2	2.00	2.30	3.05	4.10	5.25	6.60
2 1/4	2.10	2.40	3.20	4.30	5.50	6.90
2 1/2	2.20	2.50	3.35	4.50	5.75	7.20

Diam., inch. . .	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$
Length over all, inches.						
2 3/4	\$2.30	\$2.60	\$3.50	\$4.70	\$6.00	\$7.50
3	2.40	2.70	3.65	4.90	6.25	7.80
3 1/4	2.50	2.80	3.80	5.10	6.50	8.10
3 1/2	2.60	2.90	3.95	5.30	6.75	8.40
3 3/4	2.70	3.00	4.10	5.50	7.00	8.70
4	2.80	3.10	4.25	5.70	7.25	9.00

Hexagon Nuts 10 per cent. extra. Special heads charged at special prices.

## WOOD OR LAG SCREW.

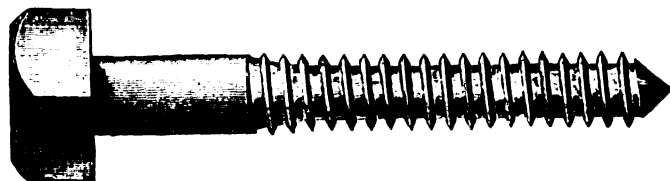


Fig. 2592.

## GIMLET POINTED COACH SCREW.

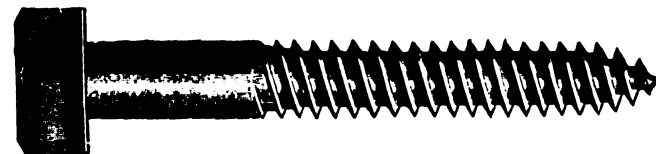


Fig. 2593.

Prices, Lag Screws, Fig. 2592, and Gimlet Pointed Coach Screws, Fig. 2593. Per Hundred.

Diam., inch. . .	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$ & $\frac{3}{4}$	$\frac{3}{4}$	1
Length under Head, inches.							
1 1/2	\$2.70	\$3.10	\$4.00	\$4.30			
2	2.90	3.30	4.25	4.60	\$6.50		
2 1/2	3.10	3.50	4.50	4.90	6.90	\$10.00	
3	3.30	3.70	4.75	5.20	7.30	10.50	\$15.00
3 1/2	3.50	3.90	5.00	5.50	7.70	11.00	15.75
4	3.70	4.10	5.25	5.80	8.10	11.50	16.50
4 1/2	3.90	4.30	5.50	6.10	8.50	12.00	17.25
5	4.10	4.50	5.75	6.40	8.90	12.50	18.00

Diam., inch. . .	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$ & $\frac{3}{4}$	$\frac{3}{4}$	1
Length under Head, inches.							
5 1/2	\$4.30	\$4.70	\$6.00	\$6.70	\$9.30	\$13.00	\$18.75
6	4.50	4.90	6.25	7.00	9.70	13.50	19.50
7			6.75	7.60	10.50	14.50	21.00
8			7.25	8.20	11.30	15.50	22.50
9			7.75	8.80	12.10	16.50	24.00
10				9.40	12.90	17.50	25.50
11				10.00	13.70	18.50	27.00
12				10.60	14.50	19.50	28.50

# **BOLT ENDS, TAP BOLTS, TRACK BOLTS, ETC.** **BOLT END. HANGER BOLT.**

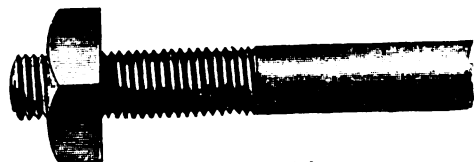


Fig. 2594.

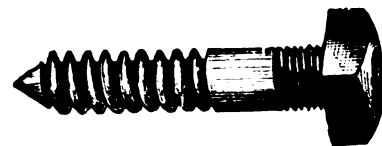


Fig. 2595.

## **Prices, Bolt Ends, with Square Nuts, Fig. 2594.**

Diameter of iron, inches	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{2}$	3
Length, inches	6	7	7	8	9	10	11	12	13	14	15	16	17
Per pound	\$0.28	.24	.20	.16	.14	.12	.12	.12	.12	.14	.14	.16	.16

Special lengths or larger or smaller sizes made to order and charged at special prices.

## **Prices, Hanger Bolts, Fig. 2595.**

Diameter, inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	2
Length, "	4 to 6	5 to 7	6 to 8	7 to 9	8 to 12
Per pound	\$0.20	.16	.15	.14	.14

Any size made to order. Hexagon Nuts, 10 per cent. extra.

## **BLANK BOLTS.**

Round or Square Head. Per Hundred.																			
Diam., inch	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	Diam., inch	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
Length under head, inches	1 1/2	2	2 1/2	3	3 1/2	4	5	6	7	4	4 1/2	5	6	7	8	9	10	11	12
	\$2.25	2.55	2.90	3.20	4.00	5.80	8.40	11.90	17.60	\$2.75	3.30	3.90	4.70	5.50	8.30	11.40	16.20	23.10	
	2.35	2.70	3.10	3.50	4.30	6.30	9.00	12.80	18.70	2.85	3.45	4.10	5.00	5.80	8.80	12.00	17.00	24.20	
	2.45	2.85	3.30	3.80	4.60	6.80	9.60	13.60	19.80	2.95	3.60	4.30	5.30	6.10	9.30	12.60	17.90	25.30	
	2.55	3.00	3.50	4.10	4.90	7.30	10.20	14.50	20.90	3.05	3.75	4.50	5.60	6.40	9.80	13.20	18.70	26.40	
	2.65	3.15	3.70	4.40	5.20	7.80	10.80	15.30	22.00	3.15	3.90	4.70	5.90	6.70	10.30	13.80	19.60	27.50	

Hexagon Heads, 10 per cent. extra.

## **TAP BOLT, SQUARE HEAD.**

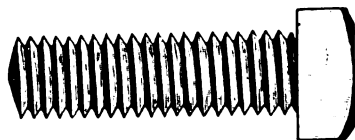


Fig. 2596.

## **TAP BOLT, HEXAGON HEAD.**

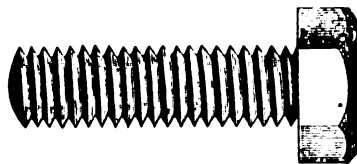


Fig. 2597.

## **STUD BOLT, HEXAGON NUT.**

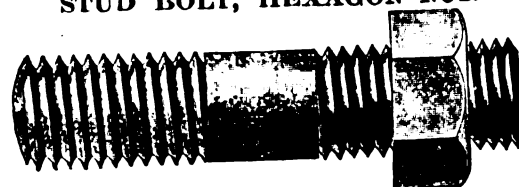


Fig. 2598.

## **Prices, Square Head Tap Bolts, Fig. 2596.**

Cut United States Standard Threads. Per Hundred.

Diam., inch	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	Diam., inch	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Length under head, inches	1 1/2	2	2 1/2	3	3 1/2	4	5	2 3/4	3	3 1/2	4	5	6	7	8
	\$2.50	2.80	3.30	3.90	4.50	6.60	8.90	\$3.00	3.30	3.80	4.40	5.50	7.60	10.40	14.50
	2.60	2.90	3.40	4.00	4.70	6.80	9.20	3.10	3.40	3.90	4.50	5.70	7.80	10.70	14.95
	2.70	3.00	3.50	4.10	4.90	7.00	9.50	3 1/2	3.70	4.25	4.85	6.10	8.30	11.40	15.90
	2.80	3.10	3.60	4.20	5.10	7.20	9.80	4	4.60	5.25	6.50	8.90	12.20	17.10	24.80
	2.90	3.20	3.70	4.30	5.30	7.40	10.10								

With Hexagon Heads, Fig. 2597, 10 per cent. extra.

## **Prices, Stud Bolts, Fig. 2598.**

Rough Iron, with Hexagon Chamfered Nuts. Per Hundred.

Diam., inch	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	2	3	4	Diam., inch	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	2	3	4
No. Threads, 16	14	13	12	11	10	9	8	No. Threads, 16	14	13	12	11	10	9	8
Length over all, inches	1 1/2	2	2 1/2	3	3 1/2	4	5	3 3/4	4	4 1/2	5	6	7	8	9
	\$4.00	5.10	5.50					\$4.90	6.45	6.85	10.25	10.25	14.50	20.50	29.60
	4.10	5.25	5.65					5.00	6.60	7.00	10.50	10.50	14.80	21.00	30.20
	4.20	5.40	5.80	8.50	8.50	12.40		5.25	6.90	7.30	11.00	11.00	15.40	22.00	31.40
	4.30	5.55	5.95	8.75	8.75	12.70				7.60	11.50	11.50	16.00	23.00	32.60
	4.40	5.70	6.10	9.00	9.00	13.00	18.00			8.00	12.00	12.00	16.60	24.00	33.80
	4.50	5.85	6.25	9.25	9.25	13.30	18.50			8.45	12.50	12.50	17.20	25.00	35.00
	4.60	6.00	6.40	9.50	9.50	13.60	19.00				13.60	13.60	18.60	27.00	37.50
	4.70	6.15	6.55	9.75	9.75	13.90	19.50				14.80	14.80	20.10	29.10	40.10
	4.80	6.30	6.70	10.00	10.00	14.20	20.00								

In ordering Studs, please give length of thread wanted on each end, and length of body.

## **RAILROAD TRACK BOLTS.**

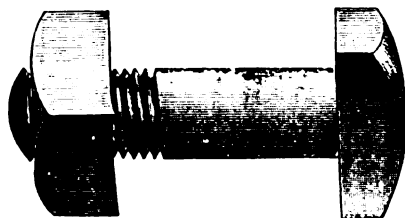


Fig. 2599.

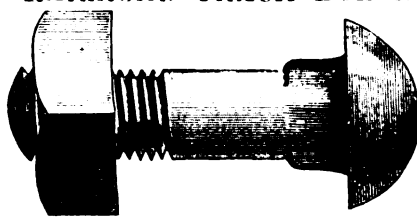


Fig. 2600.

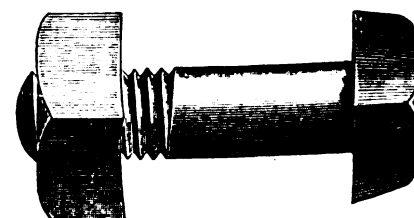


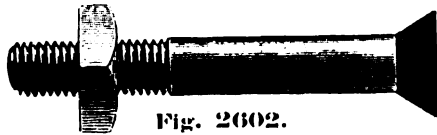
Fig. 2601.

These Bolts are made of superior finish and quality, threads are carefully cut and perfectly fitting.

Sizes, inches	$\frac{1}{2}$ x 2	$\frac{1}{2}$ x 2 1/4	$\frac{3}{4}$ x 2 1/4	$\frac{3}{4}$ x 3	$\frac{3}{4}$ x 3 1/2, 3 3/4 or 3 1/2
For Rail	16 lbs.	20 & 25 lbs.	30 & 35 lbs.	40 lbs.	50, 56 & 60 lbs.

Special prices quoted on application.

**COMMON TIRE BOLT.**



**Fig. 2602.**

**Fig. 2603.**

**Fig. 260:3.**

Per Hundred.

Length, inches.....	1	1½	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4	4½	5	5½	6
16 " inch diameter ..	\$0.60	.60	.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.05	1.10	1.10	1.20	1.30	1.40
1 " " " ..	.80	.80	.80	.85	.90	.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.40	1.50		
16 " " " ..			1.10	1.10	1.17	1.24	1.31	1.38	1.45	1.52	1.59	1.66	1.73	1.87	2.01	2.15	2.29
16 " " " ..					2.20	2.30	2.40	2.50	2.60	2.70	2.80	2.90	3.00	3.20	3.40	3.60	3.80

Per Hundred.

Length, inches	1	1½	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4	4½	5	5½	6
1/4 inch diameter	\$1.50	1.50	1.50	1.50	1.50	1.50											
3/8 " "	1.50	1.50	1.50	1.50	1.60	1.65	1.75	1.80	1.90	2.00	2.05						
1/2 " "		1.90	2.00	2.15	2.25	2.40	2.50	2.65	2.75	2.90	3.00	3.15	3.25	3.55			
5/8 " "			2.70	2.85	3.05	3.20	3.35	3.50	3.65	3.80	3.95	4.10	4.25	4.55	4.90		
3/4 " "					5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	7.00	7.40	7.80	8.20

**Fig. 2604.**

**Fig. 2604.**

**Fig. 2005.**

**Fig. 2605.**

**Per Hundred.**

Length, inches... 1 to 1½	1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4	4½	5	5½	6	6½
¾ & ¼ in. diam. \$1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.95	2.05	2.15	2.25	2.35
¾ " " " 1.60	1.68	1.75	1.83	1.90	1.98	2.05	2.13	2.20	2.28	2.35	2.50	2.65	2.80	2.95	3.10
¾ " " " 2.30	2.30	2.30	2.40	2.50	2.60	2.70	2.80	2.90	3.00	3.10	3.30	3.50	3.70	3.90	4.10
¾ " " " 3.10	3.10	3.10	3.23	3.35	3.48	3.60	3.73	3.85	3.98	4.10	4.35	4.60	4.85	5.10	5.35
¾ " " " 3.80	3.80	3.80	3.96	4.12	4.28	4.44	4.60	4.76	4.92	5.08	5.40	5.72	6.04	6.36	6.68
¾ & ¾ in. " " 7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.75	8.00	8.25	8.50	9.00	9.50	10.00	10.50	11.00
¾ inch " "						13.50	13.85	14.20	14.55	14.90	15.60	16.30	17.00	17.70	18.40
Length, inches... 7	7½	8	8½	9	9½	10	10½	11	11½	12	12½	13	14	15	16
¾ & ¼ in. diam. \$2.45	2.55	2.65	2.75	2.85	2.95	3.05	3.15	3.25	3.35	3.45	3.55	3.65	3.85	4.05	4.25
¾ " " " 3.25	3.40	3.55	3.70	3.85	4.00	4.15	4.30	4.45	4.60	4.75	4.90	5.05	5.35	5.65	5.95
¾ " " " 4.30	4.50	4.70	4.90	5.10	5.30	5.50	5.70	5.90	6.10	6.30	6.50	6.70	7.10	7.50	7.90
¾ " " " 5.60	5.85	6.10	6.35	6.60	6.85	7.10	7.35	7.60	7.85	8.10	8.35	8.60	9.10	9.60	10.10
¾ " " " 7.00	7.32	7.64	7.96	8.28	8.60	8.92	9.24	9.56	9.88	10.20	10.52	10.84	11.48	12.12	12.76
¾ & ¾ in. " " 11.50	12.00	12.50	13.00	13.50	14.00	14.50	15.00	15.50	16.00	16.50	17.00	17.50	18.50	19.50	20.50
¾ inch " "	19.10	19.80	20.50	21.20	21.90	22.60	23.30	24.00	24.70	25.40	26.10	26.80	27.50	30.30	31.70

With full sized square under heads, forged nuts, turned heads and finished points.

Length, inches...	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$	4	4 $\frac{1}{4}$	4 $\frac{1}{2}$	4 $\frac{3}{4}$	5
$\frac{7}{8}$ & $\frac{1}{2}$ in. diam. \$2.40	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	
$\frac{7}{8}$ " " " 2.70	2.70	2.80	2.90	3.00	3.10	3.20	3.30	3.40	3.50	3.60	3.70	3.80	3.90	4.00	4.10	
$\frac{3}{4}$ " " " 3.60	3.60	3.70	3.70	3.82	3.95	4.08	4.20	4.32	4.45	4.58	4.70	4.83	4.95	5.07	5.20	
$\frac{1}{2}$ " " " 5.40	5.40	5.40	5.40	5.55	5.70	5.85	6.00	6.15	6.30	6.45	6.60	6.75	6.90	7.05	7.20	
$\frac{1}{4}$ " " " 7.20	7.20	7.20	7.20	7.20	7.10	7.00	7.80	8.00	8.20	8.40	8.60	8.80	9.00	9.20	9.40	
Length, inches...	5 $\frac{1}{2}$	6	6 $\frac{1}{2}$	7	7 $\frac{1}{2}$	8	8 $\frac{1}{2}$	9	9 $\frac{1}{2}$	10	10 $\frac{1}{2}$	11	11 $\frac{1}{2}$	12	12 $\frac{1}{2}$	13
$\frac{7}{8}$ & $\frac{1}{2}$ in. diam. \$3.20	3.30	3.40	3.50													
$\frac{7}{8}$ " " " 4.30	4.50	4.70	4.90	5.10	5.30	5.50	5.70									
$\frac{3}{4}$ " " " 5.45	5.70	5.95	6.20	6.45	6.70	6.95	7.20	7.45	7.70	7.95	8.20	8.45	8.70			
$\frac{1}{2}$ " " " 7.50	7.80	8.10	8.40	8.70	9.00	9.30	9.60	9.90	10.20	10.50	10.80	11.10	11.40			
$\frac{1}{4}$ " " " 10.00	10.40	10.80	11.20	11.60	12.00	12.40	12.80	13.20	13.60	14.00	14.40	14.80	15.20	15.60	16.00	

Forged from full square iron, with forged nuts, turned heads and finished points.

Length, inches.....	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$	4	4 $\frac{1}{4}$	4 $\frac{1}{2}$
$\frac{1}{16}$ & $\frac{1}{8}$ in. diam.....	\$3.00	3.10	3.20	3.30	3.40	3.50	3.60	3.70	3.80	3.90	4.00	4.10	4.20	4.35	4.50
$\frac{1}{8}$ " ".....	4.00	4.00	4.00	4.00	4.10	4.20	4.40	4.50	4.70	4.90	5.00	5.20	5.30	5.50	5.70
$\frac{3}{16}$ " ".....	5.00	5.00	5.00	5.00	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
$\frac{1}{4}$ " ".....	7.40	7.40	7.40	7.40	7.40	7.60	7.80	8.00	8.20	8.40	8.60	8.80	9.00	9.20	9.40
$\frac{1}{2}$ " ".....	9.00	9.00	9.00	9.00	9.00	9.25	9.50	9.75	10.00	10.25	10.50	10.75	11.00	11.25	11.50
Length, inches.....	5	5 $\frac{1}{2}$	6	6 $\frac{1}{2}$	7	7 $\frac{1}{2}$	8	8 $\frac{1}{2}$	9	9 $\frac{1}{2}$	10	10 $\frac{1}{2}$	11	11 $\frac{1}{2}$	12
$\frac{1}{16}$ & $\frac{1}{8}$ in. diam.....	\$4.80	5.10	5.40	5.70	6.00	6.30									
$\frac{1}{8}$ " ".....	6.00	6.30	6.60	7.00	7.30	7.60	7.90	8.20	8.50						
$\frac{3}{16}$ " ".....	7.40	7.80	8.20	8.60	9.00	9.40	9.80	10.20	10.60	11.00	11.40	11.80	12.20	12.60	13.00
$\frac{1}{4}$ " ".....	9.80	10.20	10.60	11.00	11.40	11.80	12.20	12.60	13.00	13.40	13.80	14.20	14.60	15.00	15.40
$\frac{1}{2}$ " ".....	12.00	12.50	13.00	13.50	14.00	14.50	15.00	15.50	16.00	16.50	17.00	17.50	18.00	18.50	19.00

## BOLTS, TURNBUCKLES AND WASHERS.

STOVE BOLT, FLAT HEAD.

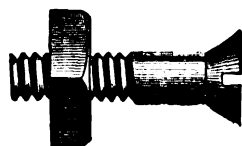


Fig. 2606.

STOVE BOLT, ROUND HEAD.

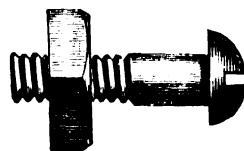


Fig. 2607.

ELEVATOR BUCKET BOLT.

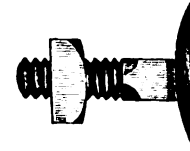


Fig. 2608.

Prices, Flat Head Stove Bolts, Fig. 2606. Per Hundred.

Length, inches.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{2}$	$3\frac{3}{4}$	4	$4\frac{1}{2}$	5
$\frac{3}{8}$ & $\frac{1}{2}$ inch diameter.....	\$0.60	.60	.60	.60	.65	.65	.70	.75	.80	.85	.90	.95	1.00	1.05	1.10	1.20	1.25	1.35	1.45
$\frac{1}{2}$ " " ".....		.65	.65	.65	.70	.70	.75	.80	.85	.90	.95	1.00	1.05	1.10	1.20	1.25	1.30	1.40	1.50
$\frac{5}{8}$ " " ".....					1.05	1.10	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.60	1.65	1.70	1.80
$\frac{3}{4}$ " " ".....					2.20	2.20	2.20	2.20	2.20	2.20	2.30	2.40	2.50	2.60	2.80	2.90	3.00	3.20	3.40

Prices, Round Head Stove Bolts, Fig. 2607. Per Hundred.

Length, inches.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{2}$	$3\frac{3}{4}$	4	$4\frac{1}{2}$	5
$\frac{3}{8}$ & $\frac{1}{2}$ inch diameter.....	\$0.85	.85	.85	.90	.90	.95	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.30	1.40	1.45	1.50	1.60	1.70
$\frac{1}{2}$ " " ".....		.95	.95	.95	1.00	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.50	1.55	1.60	1.70	1.80
$\frac{5}{8}$ " " ".....				1.35	1.40	1.45	1.55	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.05	2.10	2.15	2.25	2.35

Prices, Elevator Bucket Bolts, Fig. 2608.

MALLEABLE IRON.	WROUGHT IRON.	WROUGHT IRON.	WROUGHT IRON.
$\frac{3}{8}$ x $\frac{1}{2}$ inch.....per 100, \$1.50	$\frac{3}{8}$ x $\frac{1}{2}$ inch.....per 100, \$2.20	$\frac{1}{2}$ x $\frac{1}{2}$ inch.....per 100, \$2.20	$\frac{1}{2}$ x 1 inch.....per 100, \$3.00
$\frac{1}{2}$ x 1 " " ".....1.60	$\frac{1}{2}$ x 1 " " ".....2.30	$\frac{1}{2}$ x 1 " " ".....2.30	$\frac{1}{2}$ x 1 $\frac{1}{2}$ " " ".....3.20

Right and Left Hand Thread.

TURNBUCKLES.

Right Hand Thread and Swivel.



Fig. 2609.



Fig. 2610.

Prices, Turnbuckles, Figs. 2609 or 2610.

Sizes, inch.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	Sizes, inches.....	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2	$2\frac{1}{8}$	$2\frac{1}{2}$
Each.....	\$0.75	1.00	1.25	Per pound.....	\$0.20	.18	.17	.17	.16	.16	.16	.16	.17	.17	.18	.18	.18

PIPE SWIVEL OR SLEEVE NUT.



Fig. 2611.



With right and left hand threads and stub ends.

Sizes, inches.....	$\frac{3}{4}$ x 1	$\frac{7}{8}$ x $1\frac{1}{2}$	1 x 5	$1\frac{1}{8}$ x $5\frac{1}{2}$	$1\frac{1}{4}$ x 6	$1\frac{3}{8}$ x $6\frac{1}{2}$	$1\frac{1}{2}$ x 7	$1\frac{5}{8}$ x $7\frac{1}{2}$	$1\frac{3}{4}$ x 8	$1\frac{7}{8}$ x 8	$2$ x $8\frac{1}{2}$	$2\frac{1}{8}$ x $8\frac{1}{2}$	$2\frac{1}{4}$ x 9	$2\frac{3}{4}$ x 9	$2\frac{1}{2}$ x $9\frac{1}{2}$
Each.....	\$1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.40	3.80	4.25	4.75	5.50	6.25	7.00	7.75

WROUGHT IRON WASHER.

Round.



Fig. 2612.

WROUGHT IRON WASHER.

Square.



Fig. 2613.

CAST IRON WASHER.



Fig. 2614.

Prices, Wrought Iron Washers, Fig. 2612. Manufacturers' Standard List.

Diameter of Washers.	Diameter of Holes.	Thickness Wire Gauge.	For Bolts, Diameter.	Number in 100 pounds.	Per Pound.	Diameter of Washers.	Diameter of Holes.	Thickness Wire Gauge.	For Bolts, Diameter.	Number in 100 pounds.	Per Pound.
$\frac{1}{8}$ inch	$\frac{1}{8}$ inch	No. 18	$\frac{1}{8}$ inch	45000	\$0.18	$2\frac{1}{2}$ inches	$1\frac{1}{8}$ inches	No. 9	1 inch	634	\$0.084
"	"	" 16	"	13900	.124	"	"	" 9	"	500	.084
"	"	" 16	"	11250	.111	"	"	" 9	"	367	.09
"	"	" 14	"	6800	.104	"	"	" 8	"	300	.09
"	"	" 14	"	4300	.094	"	"	" 8	"	267	.09
"	"	" 12	"	2600	.09	"	"	" 8	"	247	.09
"	"	" 10	"	2250	.084	"	"	" 8	"	224	.09
"	"	" 10	"	1310	.084	"	"	" 8	"	200	.09
"	"	" 9	"	1010	.084	"	"	" 8	"	180	.09
"	"	" 9	"	867	.084	"	"	" 8	"		

Irregular sizes to order at special prices.

Prices, Square Wrought Iron Washers, Fig. 2613.

Square Washers for Bolts  $\frac{1}{2}$  to 1 inch diam., are made regularly at  $\frac{1}{2}$  cent per pound less than round washers, Fig. 2612. Other sizes made to order at special prices.

Prices, Cast Iron Washers, Fig. 2614.

These Washers are made all sizes for roof and bridge bolts, etc. Special prices will be named according to size and quantity.



## NUT LOCKS AND NUTS.

## NATIONAL LOCK WASHER.

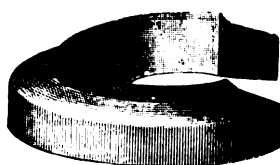


Fig. 2615.

## STARK NUT LOCK.

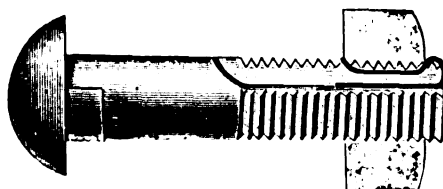


Fig. 2616.

## ECLIPSE NUT LOCKING WASHER.



Fig. 2617.

## Description and Prices, National Lock Washers, Fig. 2615.

This Lock Washer is made of tempered steel, being harder than nut. When in use in track the rib is embedded in nut (does not cut out metal in nut), thereby upsetting metal of nut and forcing it around bolt, and so locking nut that it cannot jar loose, acting at same time it has all the spring holding power of best spring nut lock made.

This Washer will wear longer than any nut lock now in use. It is so embedded in nut that when track rises and falls at joint, as cars pass over joint, nut and washer must rise and fall together, thus preventing friction. There is no rubbing or chafing of washer and nut against each other, as there must be with nut lock of only spring holding power.

For  $\frac{5}{8}$  inch Bolts.....per 1000, \$15.00      For  $\frac{3}{4}$  inch Bolts .....per 1000, \$16.00      For  $\frac{7}{8}$  inch Bolts.....per 1000, \$18.00

## Description and Prices, Stark Nut Locks, Fig. 2616.

This device actually locks the nut to the bolt, it is easily and quickly adjusted and holds the nut exactly where it is put. It prevents loss of nuts and adds largely to life of bolts by stopping all wear on threads. It saves largely in labor of tightening, and also saves by reducing the length of bolts.

This Lock is also being used largely in car building. All styles of bolts desired furnished at lowest market rates.

Nut Locks, including slotting bolts and notching nuts .....per 1000, \$18.00

## Description and Prices, Eclipse Nut Locking Washers, Fig. 2617.

This Washer is made of the best refined malleable iron, and is adapted for use wherever a washer is required, whether on wood or other material. It is a perfect nut lock for locking the nuts of railroad fish-plates, and is very serviceable on freight and passenger car trucks, railroad bridges, etc.

## Washers for Square Nuts, U. S. Standard.

Nos.	2	3	4	5	6	7	8	9	10	11	12	13
Holes, ins.	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$1$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$2$
Per 100	\$1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.70	3.00	3.30	3.60	4.00

## Bridge or Car Truck Washers.

Nos.	18	19	20	21
Holes, inches	$\frac{1}{2}$	$\frac{3}{4}$	$1$	$1\frac{1}{4}$
Per 100	\$3.50	4.00	4.50	5.00

Washers for Hexagon Nuts, 10 per cent. less than above prices.

## SQUARE NUTS.

## Cold Punched.

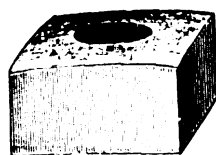


Fig. 2618.

## Hot Pressed.

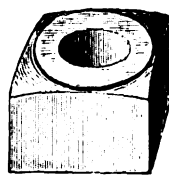


Fig. 2619.

## HEXAGON NUTS.

## Hot Pressed.

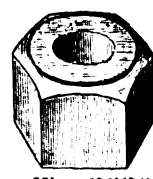


Fig. 2620.

## Cold Punched.

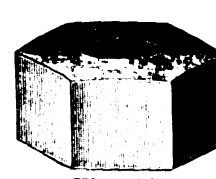


Fig. 2621.

## Prices, Square Nuts, Figs. 2618 and 2619.

## Manufacturers' Standard List.

Width of Nuts.	Thickness of Nuts.	Diameter of Holes.	For Bolts. Diameter.	Number in 100 pounds.	Hot. Per Pound.	Cold. Per Pound.
$\frac{1}{2}$ inch	$\frac{1}{4}$ inch	$\frac{3}{8}$ inch	$\frac{1}{4}$ inch	6750	\$0.13	\$0.13 $\frac{3}{4}$
$\frac{3}{4}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{3}{8}$ "	3540	.11 $\frac{3}{4}$	.12 $\frac{3}{4}$
$1$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{1}{2}$ "	2100	.10	.10 $\frac{3}{4}$
$1\frac{1}{4}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	$\frac{5}{8}$ "	1330	.09	.09 $\frac{3}{4}$
$1\frac{1}{2}$ "	$\frac{3}{4}$ "	$\frac{7}{8}$ "	$\frac{3}{4}$ "	1190	.09	.09 $\frac{3}{4}$
$1\frac{3}{4}$ "	$\frac{7}{8}$ "	$1$ "	$\frac{7}{8}$ "	840	.08 $\frac{3}{4}$	.09 $\frac{3}{4}$
$2$ "	$1$ "	$1\frac{1}{8}$ "	$1$ "	650	.08 $\frac{3}{4}$	.09
$2\frac{1}{4}$ "	$1\frac{1}{8}$ "	$1\frac{1}{4}$ "	$1\frac{1}{8}$ "	580	.08 $\frac{3}{4}$	.08 $\frac{3}{4}$
$2\frac{1}{2}$ "	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "	$1\frac{1}{4}$ "	435	.08 $\frac{3}{4}$	.08 $\frac{3}{4}$
$2\frac{3}{4}$ "	$1\frac{3}{4}$ "	$1\frac{3}{4}$ "	$1\frac{3}{4}$ "	315	.08 $\frac{3}{4}$	.08 $\frac{3}{4}$
$3$ "	$2$ "	$2$ "	$2$ "	260	.08	.08 $\frac{3}{4}$
$3\frac{1}{4}$ "	$2\frac{1}{4}$ "	$2\frac{1}{4}$ "	$2\frac{1}{4}$ "	180	.08	.08 $\frac{3}{4}$
$3\frac{1}{2}$ "	$2\frac{1}{2}$ "	$2\frac{1}{2}$ "	$2\frac{1}{2}$ "	163	.08	.08 $\frac{3}{4}$
$3\frac{3}{4}$ "	$2\frac{3}{4}$ "	$2\frac{3}{4}$ "	$2\frac{3}{4}$ "	141	.08	.08 $\frac{3}{4}$
$4$ "	$3$ "	$3$ "	$3$ "	105	.08	.08 $\frac{3}{4}$
$4\frac{1}{4}$ "	$3\frac{1}{4}$ "	$3\frac{1}{4}$ "	$3\frac{1}{4}$ "	98	.08	.08 $\frac{3}{4}$
$4\frac{1}{2}$ "	$3\frac{1}{2}$ "	$3\frac{1}{2}$ "	$3\frac{1}{2}$ "	74	.08	.08 $\frac{3}{4}$
$4\frac{3}{4}$ "	$3\frac{3}{4}$ "	$3\frac{3}{4}$ "	$3\frac{3}{4}$ "	64	.08 $\frac{3}{4}$	.08 $\frac{3}{4}$
$5$ "	$4$ "	$4$ "	$4$ "	52	.08 $\frac{3}{4}$	.08 $\frac{3}{4}$
$5\frac{1}{4}$ "	$4\frac{1}{4}$ "	$4\frac{1}{4}$ "	$4\frac{1}{4}$ "	40	.08 $\frac{3}{4}$	.08 $\frac{3}{4}$
$5\frac{1}{2}$ "	$4\frac{1}{2}$ "	$4\frac{1}{2}$ "	$4\frac{1}{2}$ "	31	.08 $\frac{3}{4}$	.09 $\frac{3}{4}$
$5\frac{3}{4}$ "	$4\frac{3}{4}$ "	$4\frac{3}{4}$ "	$4\frac{3}{4}$ "	26	.08 $\frac{3}{4}$	.09 $\frac{3}{4}$
$6$ "	$5$ "	$5$ "	$5$ "	21	.09 $\frac{3}{4}$	.09 $\frac{3}{4}$
$6\frac{1}{4}$ "	$5\frac{1}{4}$ "	$5\frac{1}{4}$ "	$5\frac{1}{4}$ "	19	.09 $\frac{3}{4}$	.09 $\frac{3}{4}$
$6\frac{1}{2}$ "	$5\frac{1}{2}$ "	$5\frac{1}{2}$ "	$5\frac{1}{2}$ "	14	.09 $\frac{3}{4}$	.09 $\frac{3}{4}$

## Prices, Hexagon Nuts, Figs. 2620 and 2621.

## Manufacturers' Standard List.

Width of Nuts.	Thickness of Nuts.	Diameter of Holes.	For Bolts. Diameter.	Number in 100 pounds.	Hot. Per Pound.	Cold. Per Pound.
$\frac{1}{2}$ inch	$\frac{1}{4}$ inch	$\frac{3}{8}$ inch	$\frac{1}{4}$ inch	7800	\$0.20	\$0.22
$\frac{3}{4}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{3}{8}$ "	4440	.16	.17 $\frac{3}{4}$
$1$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{1}{2}$ "	2330	.13	.13 $\frac{3}{4}$
$1\frac{1}{4}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	$\frac{5}{8}$ "	1430	.11 $\frac{3}{4}$	.11 $\frac{3}{4}$
$1\frac{1}{2}$ "	$\frac{3}{4}$ "	$\frac{7}{8}$ "	$\frac{3}{4}$ "	1330	.11 $\frac{3}{4}$	.11 $\frac{3}{4}$
$1\frac{3}{4}$ "	$\frac{7}{8}$ "	$1$ "	$\frac{7}{8}$ "	1010	.10 $\frac{3}{4}$	.11
$2$ "	$1$ "	$1\frac{1}{8}$ "	$1$ "	730	.10 $\frac{3}{4}$	.10 $\frac{3}{4}$
$2\frac{1}{4}$ "	$1\frac{1}{8}$ "	$1\frac{1}{4}$ "	$1\frac{1}{8}$ "	630	.10 $\frac{3}{4}$	.10 $\frac{3}{4}$
$2\frac{1}{2}$ "	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "	$1\frac{1}{4}$ "	514	.09 $\frac{3}{4}$	.10 $\frac{1}{4}$
$2\frac{3}{4}$ "	$1\frac{3}{4}$ "	$1\frac{3}{4}$ "	$1\frac{3}{4}$ "	435	.09 $\frac{3}{4}$	.10 $\frac{1}{4}$
$3$ "	$2$ "	$2$ "	$2$ "	376	.09 $\frac{3}{4}$	.10 $\frac{1}{4}$
$3\frac{1}{4}$ "	$2\frac{1}{4}$ "	$2\frac{1}{4}$ "	$2\frac{1}{4}$ "	300	.09 $\frac{3}{4}$	.09 $\frac{3}{4}$
$3\frac{1}{2}$ "	$2\frac{1}{2}$ "	$2\frac{1}{2}$ "	$2\frac{1}{2}$ "	250	.09 $\frac{3}{4}$	.09 $\frac{3}{4}$
$3\frac{3}{4}$ "	$2\frac{3}{4}$ "	$2\frac{3}{4}$ "	$2\frac{3}{4}$ "	221	.09 $\frac{3}{4}$	.09 $\frac{3}{4}$
$4$ "	$3$ "	$3$ "	$3$ "	197	.09 $\frac{3}{4}$	.09 $\frac{3}{4}$
$4\frac{1}{4}$ "	$3\frac{1}{4}$ "	$3\frac{1}{4}$ "	$3\frac{1}{4}$ "	174	.09 $\frac{3}{4}$	.09 $\frac{3}{4}$
$4\frac{1}{2}$ "	$3\frac{1}{2}$ "	$3\frac{1}{2}$ "	$3\frac{1}{2}$ "	157	.09 $\frac{3}{4}$	.09 $\frac{3}{4}$
$4\frac{3}{4}$ "	$3\frac{3}{4}$ "	$3\frac{3}{4}$ "	$3\frac{3}{4}$ "	100	.09 $\frac{3}{4}$	.09 $\frac{3}{4}$
$5$ "	$4$ "	$4$ "	$4$ "	72	.09 $\frac{3}{4}$	.09 $\frac{3}{4}$
$5\frac{1}{4}$ "	$4\frac{1}{4}$ "	$4\frac{1}{4}$ "	$4\frac{1}{4}$ "	54	.09 $\frac{3}{4}$	.10 $\frac{1}{4}$
$5\frac{1}{2}$ "	$4\frac{1}{2}$ "	$4\frac{1}{2}$ "	$4\frac{1}{2}$ "	41	.10	.10 $\frac{3}{4}$
$5\frac{3}{4}$ "	$4\frac{3}{4}$ "	$4\frac{3}{4}$ "	$4\frac{3}{4}$ "	37	.10 $\frac{3}{4}$	.10 $\frac{3}{4}$
$6$ "	$5$ "	$5$ "	$5$ "	30	.10 $\frac{3}{4}$	.10 $\frac{3}{4}$
$6\frac{1}{4}$ "	$5\frac{1}{4}$ "	$5\frac{1}{4}$ "	$5\frac{1}{4}$ "	20	.11	.11 $\frac{3}{4}$
$6\frac{1}{2}$ "	$5\frac{1}{2}$ "	$5\frac{1}{2}$ "	$5\frac{1}{2}$ "	15	.11	.11 $\frac{3}{4}$

## SQUARE AND HEXAGON NUTS.

## HOT PRESSED NUTS.

## Square.

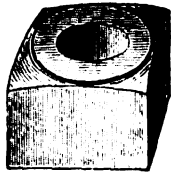


Fig. 2622.

## Hexagon.

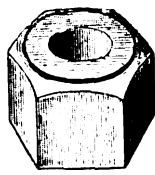


Fig. 2623.

## COLD PUNCHED NUTS.

## Square.

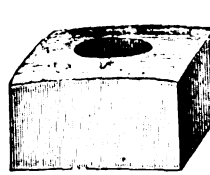


Fig. 2624.

## Hexagon.

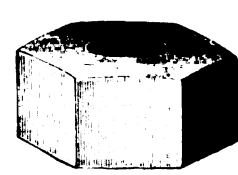


Fig. 2625.

## Prices, Square and Hexagon Nuts, Figs. 2622 to 2625.

## United States Standard Sizes.

Width of Nuts.	Dimensions, United States Standard. Thickness of Nuts.	Diameter of Holes.	For Bolts. Diameter.	Hot Pressed Square. Number in 100 pounds.	Per Pound.	Hot Pressed Hexagon. Number in 100 pounds.	Per Pound.	Cold Punched Square. Number in 100 pounds.	Per Pound.	Cold Punched Hexagon. Number in 100 pounds.	Per Pound.
$\frac{1}{4}$ inch	$\frac{1}{8}$ inch	$.185 = \frac{3}{16}$ inch	$\frac{1}{4}$ inch	7100	\$0.13	8880	\$0.20	6700	\$0.13	7500	\$0.21
$\frac{3}{8}$ "	$\frac{3}{16}$ "	$.240 = \frac{1}{4}$ "	$\frac{3}{8}$ "	4000	.12	4800	.18	4450	.12	5100	.19
$\frac{1}{2}$ "	$\frac{1}{4}$ "	$.294 = \frac{11}{32}$ "	$\frac{1}{2}$ "	2730	.10 $\frac{1}{2}$	3276	.14	2400	.11	2800	.14 $\frac{1}{2}$
$\frac{3}{4}$ "	$\frac{3}{8}$ "	$.340 = \frac{11}{16}$ "	$\frac{3}{4}$ "	1700	.10	2040	.13	1550	.10 $\frac{1}{2}$	1830	.13 $\frac{1}{2}$
$\frac{7}{8}$ "	$\frac{7}{16}$ "	$.400 = \frac{3}{4}$ "	$\frac{7}{8}$ "	1160	.09	1392	.11 $\frac{1}{2}$	1100	.09 $\frac{1}{2}$	1300	.11 $\frac{1}{2}$
$1 \frac{1}{8}$ "	$\frac{7}{8}$ "	$.454 = \frac{3}{4}$ "	$1 \frac{1}{8}$ "	900	.09	1080	.11 $\frac{1}{2}$	825	.09 $\frac{1}{2}$	1000	.11 $\frac{1}{2}$
$1 \frac{1}{4}$ "	$1$ "	$.507 = \frac{3}{4}$ "	$1 \frac{1}{4}$ "	653	.08 $\frac{1}{2}$	784	.10 $\frac{1}{2}$	596	.08 $\frac{1}{2}$	725	.10 $\frac{1}{2}$
$1 \frac{3}{8}$ "	$1 \frac{1}{8}$ "	$.620 = \frac{5}{8}$ "	$1 \frac{3}{8}$ "	386	.08 $\frac{1}{2}$	463	.09 $\frac{1}{2}$	348	.08 $\frac{1}{2}$	438	.10 $\frac{1}{2}$
$1 \frac{1}{2}$ "	$1 \frac{1}{4}$ "	$.731 = \frac{3}{4}$ "	$1 \frac{1}{2}$ "	260	.08 $\frac{1}{2}$	312	.09 $\frac{1}{2}$	228	.08 $\frac{1}{2}$	296	.10 $\frac{1}{2}$
$1 \frac{3}{4}$ "	$1 \frac{3}{8}$ "	$.837 = \frac{3}{4}$ "	$1 \frac{3}{4}$ "	170	.08 $\frac{1}{2}$	204	.09 $\frac{1}{2}$	156	.08 $\frac{1}{2}$	198	.10
$2$ "	$1 \frac{1}{2}$ "	$.940 = \frac{3}{4}$ "	$2$ "	122	.08 $\frac{1}{2}$	146	.09 $\frac{1}{2}$	124	.08 $\frac{1}{2}$	152	.10
$2 \frac{1}{8}$ "	$1 \frac{3}{4}$ "	$1.065 = 1 \frac{1}{8}$ "	$2 \frac{1}{8}$ "	90	.08 $\frac{1}{2}$	108	.09 $\frac{1}{2}$	88	.08 $\frac{1}{2}$	103	.10 $\frac{1}{2}$
$2 \frac{1}{4}$ "	$1 \frac{7}{8}$ "	$1.160 = 1 \frac{1}{4}$ "	$2 \frac{1}{4}$ "	69	.08 $\frac{1}{2}$	83	.09 $\frac{1}{2}$	65	.08 $\frac{1}{2}$	77	.10 $\frac{1}{2}$
$2 \frac{3}{8}$ "	$2$ "	$1.284 = 1 \frac{1}{2}$ "	$2 \frac{3}{8}$ "	54	.08 $\frac{1}{2}$	65	.10 $\frac{1}{2}$	54	.09 $\frac{1}{2}$	63	.10 $\frac{1}{2}$
$2 \frac{1}{2}$ "	$2 \frac{1}{8}$ "	$1.389 = 1 \frac{1}{2}$ "	$2 \frac{1}{2}$ "	43	.08 $\frac{1}{2}$	52	.10 $\frac{1}{2}$	41	.09 $\frac{1}{2}$	50	.10 $\frac{1}{2}$
$2 \frac{3}{4}$ "	$2 \frac{1}{4}$ "	$1.491 = 1 \frac{1}{2}$ "	$2 \frac{3}{4}$ "	35	.09 $\frac{1}{2}$	42	.10 $\frac{1}{2}$	33	.09 $\frac{1}{2}$	40	.11 $\frac{1}{2}$
$3$ "	$2 \frac{3}{8}$ "	$1.616 = 1 \frac{1}{2}$ "	$3$ "	29	.09 $\frac{1}{2}$	35	.10 $\frac{1}{2}$	27	.09 $\frac{1}{2}$	34	.11 $\frac{1}{2}$
$3 \frac{1}{8}$ "	$2 \frac{7}{8}$ "	$1.712 = 1 \frac{1}{2}$ "	$3 \frac{1}{8}$ "	24	.09 $\frac{1}{2}$	29	.11	23	.09 $\frac{1}{2}$	28	.11 $\frac{1}{2}$
$3 \frac{1}{4}$ "	$3$ "	$1.836 = 1 \frac{1}{2}$ "	$3 \frac{1}{4}$ "	20 $\frac{1}{2}$	.10	24 $\frac{1}{2}$	.11 $\frac{1}{2}$	19	.10 $\frac{3}{4}$	24	.12 $\frac{1}{2}$
$3 \frac{3}{4}$ "	$3 \frac{1}{4}$ "	$1.962 = 1 \frac{1}{2}$ "	$3 \frac{3}{4}$ "	17	.10	20 $\frac{1}{2}$	.11 $\frac{1}{2}$	17	.10 $\frac{3}{4}$	20	.12 $\frac{1}{2}$

## CHAMFERED AND TRIMMED NUTS.

## Square.

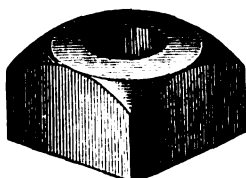


Fig. 2626.

## Hexagon.

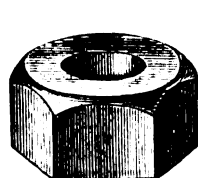


Fig. 2627.

## FINISHED MACHINERY NUT.

## Hexagon.

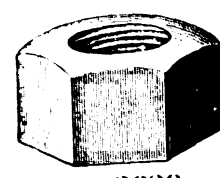


Fig. 2628.

## Prices, Chamfered and Trimmed Nuts.

## United States standard sizes. Reamed holes.

Width of Nuts.	Thickness of Nuts.	Diameter of Holes.	For Bolts. Diameter.	Square. Per Pound.	Hexagon. Per Pound.
$\frac{1}{4}$ inch	$\frac{1}{8}$ inch	$\frac{3}{16}$ inch	$\frac{1}{4}$ inch	\$0.20	\$0.27
$\frac{3}{8}$ "	$\frac{3}{16}$ "	$\frac{1}{4}$ "	$\frac{3}{8}$ "	.18	.24
$\frac{1}{2}$ "	$\frac{1}{4}$ "	$\frac{5}{16}$ "	$\frac{1}{2}$ "	.14 $\frac{1}{2}$	.18 $\frac{1}{2}$
$\frac{3}{4}$ "	$\frac{3}{8}$ "	$\frac{3}{4}$ "	$\frac{3}{4}$ "	.14	.18
$\frac{7}{8}$ "	$\frac{7}{16}$ "	$\frac{1}{2}$ "	$\frac{7}{8}$ "	.11 $\frac{1}{2}$	.14
$1 \frac{1}{8}$ "	$\frac{7}{8}$ "	$\frac{3}{4}$ "	$1 \frac{1}{8}$ "	.11 $\frac{1}{2}$	.14
$1 \frac{1}{4}$ "	$1$ "	$\frac{3}{4}$ "	$1 \frac{1}{4}$ "	.10	.12 $\frac{1}{2}$
$1 \frac{3}{8}$ "	$1 \frac{1}{8}$ "	$\frac{3}{4}$ "	$1 \frac{3}{8}$ "	.09 $\frac{1}{2}$	.10 $\frac{1}{2}$
$1 \frac{1}{2}$ "	$1 \frac{1}{4}$ "	$\frac{3}{4}$ "	$1 \frac{1}{2}$ "	.09 $\frac{1}{2}$	.10 $\frac{1}{2}$
$1 \frac{3}{4}$ "	$1 \frac{3}{8}$ "	$\frac{3}{4}$ "	$1 \frac{3}{4}$ "	.09 $\frac{1}{2}$	.10 $\frac{1}{2}$
$2$ "	$1 \frac{1}{2}$ "	$1 \frac{1}{4}$ "	$2$ "	.09 $\frac{1}{2}$	.10 $\frac{1}{2}$
$2 \frac{1}{8}$ "	$1 \frac{3}{4}$ "	$1 \frac{3}{8}$ "	$2 \frac{1}{8}$ "	.09 $\frac{1}{2}$	.10 $\frac{1}{2}$
$2 \frac{1}{4}$ "	$1 \frac{7}{8}$ "	$1 \frac{3}{8}$ "	$2 \frac{1}{4}$ "	.09 $\frac{1}{2}$	.11 $\frac{1}{2}$
$2 \frac{3}{8}$ "	$2$ "	$1 \frac{1}{2}$ "	$2 \frac{3}{8}$ "	.10 $\frac{3}{4}$	.11 $\frac{3}{4}$
$2 \frac{1}{2}$ "	$2 \frac{1}{8}$ "	$1 \frac{1}{2}$ "	$2 \frac{1}{2}$ "	.10 $\frac{3}{4}$	.11 $\frac{3}{4}$
$2 \frac{3}{4}$ "	$2 \frac{1}{4}$ "	$1 \frac{1}{2}$ "	$2 \frac{3}{4}$ "	.10 $\frac{3}{4}$	.11 $\frac{3}{4}$
$3$ "	$2 \frac{3}{8}$ "	$1 \frac{1}{2}$ "	$3$ "	.10 $\frac{3}{4}$	.11 $\frac{3}{4}$
$3 \frac{1}{8}$ "	$2 \frac{7}{8}$ "	$1 \frac{1}{2}$ "	$3 \frac{1}{8}$ "	.11	.12 $\frac{1}{2}$
$3 \frac{1}{4}$ "	$3$ "	$1 \frac{1}{2}$ "	$3 \frac{1}{4}$ "	.11	.12 $\frac{1}{2}$
$3 \frac{3}{4}$ "	$3 \frac{1}{4}$ "	$1 \frac{1}{2}$ "	$3 \frac{3}{4}$ "	.11	.12 $\frac{1}{2}$

## Prices, Finished Case Hardened Machinery Nuts.

## Nut and thread United States standard.

## Every Nut is warranted uniform in outside size and thread.

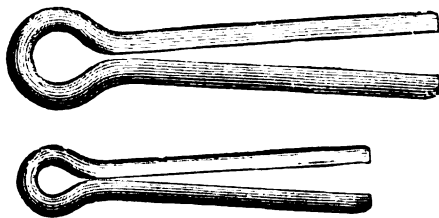
For Bolts. Diameter.	Width of Nuts.	Thickness of Nuts.	Number of Threads.	No. Packed in Each Box.	Each.
$\frac{1}{4}$ inch	$\frac{1}{4}$ inch	$\frac{1}{8}$ inch	20	100	\$0.06
$\frac{3}{8}$ "	$\frac{3}{8}$ "	$\frac{3}{16}$ "	18	100	.07
$\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{1}{4}$ "	16	100	.08
$\frac{3}{4}$ "	$\frac{3}{4}$ "	$\frac{3}{8}$ "	14	100	.09
$1 \frac{1}{8}$ "	$1 \frac{1}{8}$ "	$\frac{7}{16}$ "	12 or 13	100	.10
$1 \frac{1}{4}$ "	$1 \frac{1}{4}$ "	$\frac{1}{2}$ "	12	100	.12
$1 \frac{3}{8}$ "	$1 \frac{3}{8}$ "	$\frac{5}{8}$ "	11	100	.15
$1 \frac{1}{2}$ "	$1 \frac{1}{2}$ "	$\frac{3}{4}$ "	11	100	.17
$1 \frac{3}{4}$ "	$1 \frac{3}{4}$ "	$\frac{7}{8}$ "	10	50	.18
$2$ "	$2$ "	$1$ "	9	50	.22
$2 \frac{1}{8}$ "	$2 \frac{1}{8}$ "	$1 \frac{1}{8}$ "	8	50	.30
$2 \frac{1}{4}$ "	$2 \frac{1}{4}$ "	$1 \frac{1}{4}$ "	7	25	.35
$2 \frac{3}{8}$ "	$2 \frac{3}{8}$ "	$1 \frac{3}{8}$ "	7	25	.45
$2 \frac{1}{2}$ "	$2 \frac{1}{2}$ "	$1 \frac{1}{2}$ "	6	15	.55
$2 \frac{3}{4}$ "	$2 \frac{3}{4}$ "	$1 \frac{3}{4}$ "	6	15	.65
$3$ "	$3$ "	$1 \frac{1}{2}$ "	5 $\frac{1}{2}$	10	.80
$3 \frac{1}{8}$ "	$3 \frac{1}{8}$ "	$1 \frac{5}{8}$ "	5	10	1.00
$3 \frac{1}{4}$ "	$3 \frac{1}{4}$ "	$1 \frac{3}{4}$ "	5	10	1.50
$3 \frac{3}{4}$ "	$3 \frac{3}{4}$ "	$2$ "	4 $\frac{1}{2}$	10	2.00

## Prices, Tapped Nuts, in 100 lb. Lots.

## Furnished chamfered unless otherwise ordered. Add to prices of nuts.

Diameter of Bolts, inches...	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$1$	$1 \frac{1}{8}$	$1 \frac{1}{4}$	$1 \frac{3}{8}$	$1 \frac{1}{2}$	$1 \frac{3}{4}$	$2$	$2 \frac{1}{8}$	$2 \frac{1}{4}$	$2 \frac{3}{8}$	$2 \frac{1}{2}$	$3$
Threads to inch.....	20	18	16	14	13	12	11	10	9	8	7	6	5 $\frac{1}{2}$	5 $\frac{1}{4}$	5	4 $\frac{1}{2}$
Square Nuts extra per lb.,	\$0.10	.07	.05	.04 $\frac{1}{2}$	.03	.02 $\frac{1}{2}$	.02	.01 $\frac{1}{2}$	.01 $\frac{1}{2}$	.01 $\frac{1}{2}$	.02	.02	.02 $\frac{1}{2}$	.02 $\frac{1}{2}$	.02 $\frac{1}{2}$	.03 $\frac{1}{2}$
Hexagon " " " "	.12	.09	.06 $\frac{1}{2}$	.06	.04	.03 $\frac{1}{2}$	.02 $\frac{1}{2}$	.02	.02	.02	.02 $\frac{1}{2}$	.02 $\frac{1}{2}$	.03	.03	.03 $\frac{1}{2}$	.04 $\frac{1}{2}$

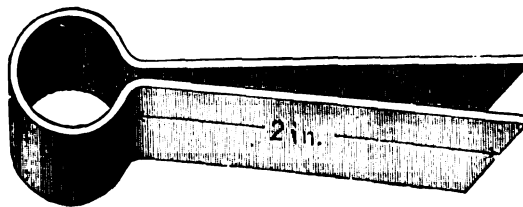
## SPRING COTTERS.



**Fig. 2629.**

The length measurements given are from under eye to point.

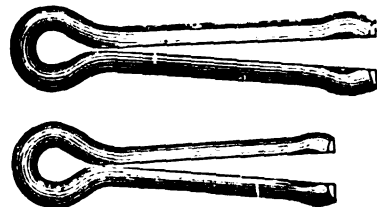
### FLAT SPRING KEY.



**Fig. 2630.**

The length measurements given are from under eye or neck to center of point.

### SPRING KEYS.



**Fig. 2631.**

Other sizes made to order at short notice.

### Prices, Spring Cotters, Fig. 2629.

<b>1/2 INCH WIRE—No. 13 WIRE GAUGE.</b>			<b>3/4 INCH WIRE—No. 10 WIRE GAUGE.</b>			<b>1 INCH WIRE—No. 6 WIRE GAUGE.</b>			<b>1 1/4 INCH WIRE—No. 1 WIRE GAUGE.</b>		
1/2 x 1/8 inch.....	per 1000,	\$3.00	3/4 x 1 1/8 inches.....	per 1000,	\$6.75	1 x 3/4 inch.....	per 1000,	\$ 5.50	1 1/4 x 1 1/8 inches.....	per 1000,	\$18.00
1/2 x 1/4 ".....	"	3.00	3/4 x 1/2 ".....	"	7.50	1 x 1/2 ".....	"	6.00	1 1/4 x 1/2 ".....	"	19.50
3/8 x 1/4 ".....	"	3.25	3/4 x 3/8 ".....	"	8.25	1 x 3/8 ".....	"	6.50	1 1/4 x 3/8 ".....	"	21.00
3/8 x 1/2 ".....	"	3.50	3/4 x 1/4 ".....	"	9.00	1 x 1/4 ".....	"	7.50	1 1/4 x 1/4 ".....	"	22.50
1/2 x 1/2 ".....	"	3.75				1 x 3/16 ".....	"	8.50	1 1/4 x 3/16 ".....	"	24.50
1/2 x 1 ".....	"	4.00	<b>1/2 INCH WIRE—No. 9 WIRE GAUGE.</b>			1 x 1/8 ".....	"	9.50	1 1/4 x 1/8 ".....	"	26.50
3/4 x 1 ".....	"	4.25	1/2 x 1/2 inch.....	per 1000,	\$1.00	1 x 1/16 ".....	"	10.50	1 1/4 x 1/16 ".....	"	30.00
3/4 x 1 1/2 ".....	"	4.75	1/2 x 3/8 ".....	"	4.25	1 x 3/32 ".....	"	11.75	1 1/4 x 3/32 ".....	"	33.00
3/4 x 2 ".....	"	5.25	1/2 x 1/4 ".....	"	4.50	1 x 1/16 ".....	"	12.75			
3/4 x 2 1/2 ".....	"	5.75	1/2 x 3/16 ".....	"	4.75	1 x 1/32 ".....	"	14.00			
			1/2 x 1/8 ".....	"	5.00	1 x 1/64 ".....	"	15.25			
			1/2 x 1/16 ".....	"	5.50				<b>1/2 INCH WIRE.</b>		
			1/2 x 1/32 ".....	"	6.25	<b>3/4 INCH WIRE—No. 5 WIRE GAUGE.</b>			1 x 1 1/8 inches.....	per 1000,	\$18.75
<b>5/8 INCH WIRE—No. 12 WIRE GAUGE.</b>			1/2 x 1/64 ".....	"	7.00	3/4 x 3/4 inch.....	per 1000,	\$ 7.50	1 x 1 1/4 ".....	"	20.50
5/8 x 1/2 inch.....	per 1000,	\$3.25	1/2 x 1/128 ".....	"	7.75	3/4 x 1/2 ".....	"	8.00	1 x 3/2 ".....	"	22.25
5/8 x 3/4 ".....	"	3.50	1/2 x 1/256 ".....	"	8.50	3/4 x 1/4 ".....	"	9.00	1 x 1 1/2 ".....	"	24.00
5/8 x 1 ".....	"	4.00	1/2 x 1/512 ".....	"	9.50	3/4 x 3/8 ".....	"	10.00	1 x 1 3/4 ".....	"	25.75
5/8 x 1 1/2 ".....	"	4.25				3/4 x 1/16 ".....	"	11.25	1 x 2 ".....	"	27.00
5/8 x 2 ".....	"	4.75	<b>1 1/4 INCH WIRE—No. 8 WIRE GAUGE.</b>			3/4 x 3/32 ".....	"	12.25	1 x 2 1/2 ".....	"	28.75
5/8 x 2 1/2 ".....	"	5.25	1 1/4 x 1/2 inch.....	per 1000,	\$ 4.25	3/4 x 1/8 ".....	"	12.25	1 x 3 ".....	"	32.50
5/8 x 3 ".....	"	5.75	1 1/4 x 3/4 ".....	"	4.50	3/4 x 1/4 ".....	"	13.50	1 x 3 1/2 ".....	"	36.50
5/8 x 3 1/2 ".....	"	6.25	1 1/4 x 1 ".....	"	4.75	3/4 x 3/8 ".....	"	14.75			
			1 1/4 x 1 1/2 ".....	"	5.00	3/4 x 1/2 ".....	"	16.00	<b>3/8 INCH WIRE.</b>		
<b>1/2 INCH WIRE—No. 11 WIRE GAUGE.</b>			1 1/4 x 1 3/4 ".....	"	5.50	3/4 x 3/4 ".....	"	17.25	3/8 x 2 inches.....	per 1000,	\$29.00
1/2 x 1/2 inch.....	per 1000,	\$3.50	1 1/4 x 2 ".....	"	6.25	<b>1/2 INCH WIRE—No. 4 WIRE GAUGE.</b>			3/8 x 2 1/2 ".....	"	31.50
1/2 x 3/4 ".....	"	3.75	1 1/4 x 2 1/2 ".....	"	7.25	1/2 x 1 inch.....	per 1000,	\$10.00	3/8 x 3 ".....	"	34.00
1/2 x 1 ".....	"	4.00	1 1/4 x 3 ".....	"	8.25	1/2 x 1 1/2 ".....	"	11.00	3/8 x 3 1/2 ".....	"	39.00
1/2 x 1 1/2 ".....	"	4.25	1 1/4 x 3 1/2 ".....	"	9.00	1/2 x 1 3/4 ".....	"	11.50	3/8 x 4 ".....	"	44.00
1/2 x 2 ".....	"	4.50	1 1/4 x 4 ".....	"	10.00	1/2 x 2 ".....	"	12.00	3/8 x 5 ".....	"	49.00
1/2 x 2 1/2 ".....	"	5.00	1 1/4 x 4 1/2 ".....	"	11.00	1/2 x 2 1/2 ".....	"	12.75	3/8 x 6 ".....	"	59.00
1/2 x 3 ".....	"	5.50				1/2 x 3 ".....	"	13.25			
1/2 x 3 1/2 ".....	"	6.00	<b>3/8 INCH WIRE—No. 7 WIRE GAUGE.</b>			1/2 x 3 1/2 ".....	"	13.75	<b>1/4 INCH WIRE.</b>		
1/2 x 4 ".....	"	6.50	3/8 x 3/4 inch.....	per 1000,	\$ 5.00	1/2 x 4 ".....	"	14.50	1/4 x 2 inches.....	per 1000,	\$35.00
1/2 x 4 1/2 ".....	"	7.25	3/8 x 1 ".....	"	5.50	1/2 x 4 1/2 ".....	"	16.00	1/4 x 2 1/2 ".....	"	38.50
1/2 x 5 ".....	"	8.00	3/8 x 1 1/4 ".....	"	6.00	1/2 x 5 ".....	"	17.50	1/4 x 3 ".....	"	42.00
			3/8 x 1 1/2 ".....	"	7.00	1/2 x 5 1/2 ".....	"	18.75	1/4 x 3 1/2 ".....	"	49.00
<b>5/8 INCH WIRE—No. 10 WIRE GAUGE.</b>			3/8 x 1 3/4 ".....	"	7.75	1/2 x 6 ".....	"	20.00	1/4 x 4 ".....	"	56.00
5/8 x 1/2 inch.....	per 1000,	\$3.75	3/8 x 2 ".....	"	8.75	1/2 x 6 1/2 ".....	"	22.75	1/4 x 5 ".....	"	63.00
5/8 x 3/4 ".....	"	4.00	3/8 x 2 1/2 ".....	"	9.50	1/2 x 7 ".....	"	25.50	1/4 x 6 ".....	"	77.00
5/8 x 1 ".....	"	4.25	3/8 x 3 ".....	"	10.50						
5/8 x 1 1/2 ".....	"	4.50	3/8 x 3 1/2 ".....	"	11.50	<b>1/2 INCH WIRE—No. 1 WIRE GAUGE.</b>			<b>1/2 INCH WIRE.</b>		
5/8 x 2 ".....	"	4.75	3/8 x 4 ".....	"	12.50	1/2 x 1 inch.....	per 1000,	\$13.50	1/2 x 3 inches.....	per 1000,	\$ 75.00
5/8 x 2 1/2 ".....	"	5.25	3/8 x 4 1/2 ".....	"	13.50	1/2 x 1 1/2 ".....	"	15.00	1/2 x 4 ".....	"	91.00
5/8 x 3 ".....	"	5.75				1/2 x 1 3/4 ".....	"	16.50	1/2 x 5 ".....	"	107.00
5/8 x 3 1/2 ".....	"	6.00							1/2 x 6 ".....	"	123.00

**Prices, Spring Keys, Nubbed Ends, Fig. 2631.**

No.	000 are	No. 12	wire gauge, for	$\frac{7}{32}$	inch hole in	$\frac{1}{2}$	inch bolts.	per 1000,	\$5.00
" 00	"	" 12	"	"	"	"	"	"	5.50
" 0	"	" 12	"	"	"	"	"	"	6.00
" 1	"	" 11	"	"	"	"	"	"	6.50
" 1 $\frac{1}{2}$	"	" 11	"	"	"	"	"	"	6.75
" 2	"	" 10	"	"	"	"	"	"	7.00
" 3	"	" 10	"	"	"	"	"	"	7.50
" 4	"	" 10	"	"	"	1	"	"	8.00

**Prices, Flat Spring Keys, Fig. 2630.**

$\frac{3}{8}$ INCH WIDE—16 AND 17 WIRE GAUGE.		$\frac{1}{2}$ INCH WIDE—16 AND 17 WIRE GAUGE.		$\frac{5}{8}$ INCH WIDE—16 AND 17 WIRE GAUGE.		$\frac{3}{4}$ INCH WIDE—16 AND 17 WIRE GAUGE.	
$3_8 \times 1\frac{1}{4}$ inches.....	per 1000, \$8.00	$1_2 \times 1\frac{1}{4}$ inches.....	per 1000, \$12.00	$5_8 \times 1\frac{1}{4}$ inches ....	per 1000, \$15.00	$3_4 \times 2$ inches.....	per 1000, \$19.50
$3_8 \times 1\frac{1}{2}$ " " " " "	9.00	$1_2 \times 1\frac{1}{2}$ " " " " "	13.00	$5_8 \times 2$ " " " " "	16.00	$3_4 \times 2\frac{1}{4}$ " " " " "	21.00
$3_8 \times 1\frac{3}{4}$ " " " " "	10.00	$1_2 \times 1\frac{3}{4}$ " " " " "	14.00	$5_8 \times 2\frac{1}{2}$ " " " " "	17.50	$3_4 \times 2\frac{1}{2}$ " " " " "	22.50
$3_8 \times 2$ " " " " "	11.00	$1_2 \times 2$ " " " " "	15.00	$5_8 \times 2\frac{1}{2}$ " " " " "	19.00	$3_4 \times 2\frac{3}{4}$ " " " " "	23.75
$3_8 \times 2\frac{1}{4}$ " " " " "	12.00	$1_2 \times 2\frac{1}{4}$ " " " " "	16.00	$5_8 \times 2\frac{3}{4}$ " " " " "	20.50	$3_4 \times 3$ " " " " "	25.50
$3_8 \times 2\frac{1}{2}$ " " " " "	13.00	$1_2 \times 2\frac{1}{2}$ " " " " "	17.00	$5_8 \times 3$ " " " " "	22.00	$3_4 \times 3\frac{1}{2}$ " " " " "	28.50
$3_8 \times 2\frac{3}{4}$ " " " " "	14.00	$1_2 \times 2\frac{3}{4}$ " " " " "	18.00	$5_8 \times 3\frac{1}{2}$ " " " " "	25.00		
$3_8 \times 3$ " " " " "	15.00	$1_2 \times 3$ " " " " "	19.00				

## SET SCREWS, CAP SCREWS, ETC.

## IRON SET SCREW.



Fig. 2632.

## Case Hardened. Per Hundred.

Diam. inches	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
$\frac{3}{4}$ inch	\$2.00	2.20	2.50	2.90	3.40	4.25	5.00						
1 " "	2.15	2.35	2.65	3.10	3.60	4.25	5.00	7.00					
$1\frac{1}{4}$ " "	2.30	2.50	2.80	3.30	3.80	4.50	5.25	7.00	11.30				
$1\frac{1}{2}$ " "	2.45	2.65	2.95	3.50	4.00	4.75	5.50	7.50	11.30	14.90			
$1\frac{3}{4}$ " "	2.60	2.80	3.10	3.70	4.20	5.00	5.75	8.00	12.00	15.90	19.50		
2 " "	2.80	3.00	3.30	3.95	4.45	5.30	6.05	8.60	12.90	17.00	21.10	25.30	
$2\frac{1}{4}$ " "		3.25	3.55	4.25	4.75	5.65	6.40	9.30	13.80	18.40	22.90	27.40	
$2\frac{1}{2}$ " "			2.85	4.60	5.10	6.05	6.80	10.00	11.80	19.80	21.70	29.60	
$2\frac{3}{4}$ " "				5.00	5.50	6.50	7.25	10.80	15.90	21.40	26.70	32.00	
3 " "					5.95	7.00	7.80	11.70	17.10	23.00	28.80	34.60	
No. Threads to in 20	18	16	14	13	12	11	10	9	8	7	7		
Ex. for ea. $\frac{1}{4}$ in	\$0.25	.30	.35	.45	.50	.55	.60	1.00	1.30	1.70	2.20	2.80	

In ordering Set Screws state whether wanted with cup or oval points.

## STEEL SET SCREW.



Fig. 2633.

## Steel. Per Hundred.

Diam. inches	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
$\frac{3}{4}$ inch	\$4.80	5.30	6.00	6.95	8.15	9.60	12.00				
1 " "	5.15	5.65	6.35	7.45	8.65	10.20	12.60	16.80			
$1\frac{1}{4}$ " "	5.50	6.00	6.70	7.95	9.15	10.80	12.60	16.80	24.60		
$1\frac{1}{2}$ " "	5.85	6.35	7.05	8.45	9.65	11.40	13.20	18.00	24.60	34.60	
$1\frac{3}{4}$ " "	6.20	6.70	7.45	9.00	10.20	12.10	13.90	19.30	26.20	34.60	
2 " "	6.60	7.10	7.90	9.60	10.80	12.80	14.70	20.80	28.00	36.90	
$2\frac{1}{4}$ " "		7.55	8.40	10.20	11.50	13.60	15.50	22.40	30.00	39.50	
$2\frac{1}{2}$ " "			9.00	11.00	12.20	14.50	16.40	24.10	32.30	42.50	
$2\frac{3}{4}$ " "				11.80	13.00	15.50	17.40	25.90	34.70	46.00	
3 " "					13.90	16.60	18.50	27.80	37.30	50.00	
No. Threads to in 20	18	16	14	13	12	11	10	9	8		
Extra for ea. $\frac{1}{4}$ in	\$0.45	.50	.70	.90	1.00	1.20	1.25	2.00	2.80	4.50	

In ordering Set Screws state whether wanted with cup or oval points.

## CAP SCREW, SQUARE HEAD.

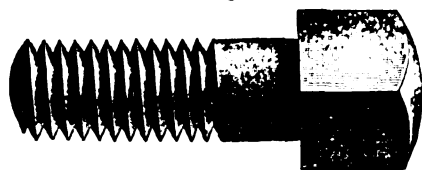


Fig. 2634.

## Square Head. Per Hundred.

Diam. of Head, ins.	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$1$	$1\frac{1}{4}$	$1\frac{1}{2}$
Length " "	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{8}$
Diam. of Screw, " "	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$1$	$1\frac{1}{4}$
$\frac{3}{4}$ inch	\$2.40	2.75	3.20	3.80	4.40	5.75		
1 " "	2.60	2.95	3.40	4.00	4.70	5.75	7.70	
$1\frac{1}{4}$ " "	2.75	3.10	3.65	4.20	4.95	6.05	7.70	10.50
$1\frac{1}{2}$ " "	2.90	3.30	3.85	4.45	5.25	6.35	8.25	10.50
$1\frac{3}{4}$ " "	3.05	3.50	4.10	4.70	5.55	6.65	8.80	11.10
2 " "	3.25	3.70	4.35	4.95	5.90	7.05	9.40	11.80
$2\frac{1}{4}$ " "		4.00	4.65	5.25	6.30	7.55	10.10	12.60
$2\frac{1}{2}$ " "			5.00	5.60	6.75	8.15	10.90	13.50
$2\frac{3}{4}$ " "				6.00	7.25	8.85	11.80	14.60
3 " "					7.80	9.65	12.80	15.90
No. Threads to in 20	18	16	14	13	12	11	10	9
Extra for ea. $\frac{1}{4}$ in	\$0.25	.35	.45	.55	.65	.90	1.20	1.50

## CAP SCREW, HEXAGON HEAD.

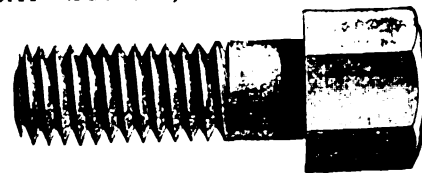


Fig. 2635.

## Hexagon Head. Per Hundred.

Diam. of Head, ins.	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$1$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$
Length " "	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{8}$
Diam. of Screw, " "	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$1$	$1\frac{1}{4}$
$\frac{3}{4}$ inch	\$3.00	3.25	3.75	4.40	5.50	7.00		
1 " "	3.25	3.50	4.00	4.70	5.70	7.00	9.50	
$1\frac{1}{4}$ " "	3.50	3.75	4.25	5.00	6.00	7.50	9.50	12.20
$1\frac{1}{2}$ " "	3.75	4.00	4.50	5.30	6.30	8.00	10.00	12.20
$1\frac{3}{4}$ " "	4.00	4.25	4.75	5.60	6.60	8.50	10.60	12.80
2 " "	4.25	4.60	5.05	5.95	7.00	9.10	11.20	13.40
$2\frac{1}{4}$ " "		5.00	5.40	6.35	7.50	9.70	11.90	14.10
$2\frac{1}{2}$ " "			5.80	6.80	8.00	10.40	12.70	14.90
$2\frac{3}{4}$ " "				7.30	8.60	11.20	13.60	15.90
3 " "					9.30	12.10	14.70	17.00
No. Threads to in 20	18	16	14	13	12	11	10	9
Extra for ea. $\frac{1}{4}$ in	\$0.30	.40	.50	.60	.80	1.00	1.30	1.60

## CAP SCREW, ROUND HEAD.

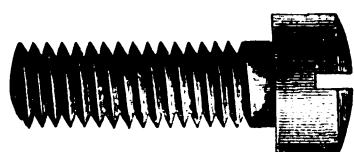


Fig. 2636.

## Round or Round Countersunk Heads. Per Hundred.

Diam. of Head, ins.	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$1$	$1\frac{1}{4}$	$1\frac{1}{2}$
Length " "	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{8}$
Diam. of Screw, " "	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$1$	$1\frac{1}{4}$
$\frac{3}{4}$ inch	\$2.00	2.25	2.50	3.00	3.50	4.00	5.00	
1 " "	2.25	2.50	2.75	3.25	3.75	4.25	5.30	6.60
$1\frac{1}{4}$ " "	2.50	2.75	3.00	3.50	4.00	4.50	5.60	6.90
$1\frac{1}{2}$ " "	2.75	3.00	3.25	3.75	4.25	4.75	5.90	7.20
$1\frac{3}{4}$ " "		3.25	3.50	4.00	4.50	5.00	6.20	7.50
2 " "			3.75	4.35	5.00	5.50	6.75	8.00
$2\frac{1}{4}$ " "				4.75	5.50	6.00	7.25	8.50
$2\frac{1}{2}$ " "					6.00	6.50	7.75	9.00
$2\frac{3}{4}$ " "						7.00	8.25	9.50
3 " "							8.75	10.00
No. Threads to in 40	30	20	18	16	14	12or13	12	11

## COLLAR SCREW, MILLED HEAD.

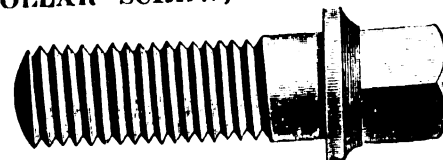


Fig. 2637.

## Milled Head. Per Hundred.

Diam. of Screw, ins.	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
$\frac{3}{4}$ inch	\$2.50	2.80	3.10	3.75	4.35	5.00	6.25				
1 " "	2.80	3.10	3.45	4.05	4.70	5.30	6.60	8.25			
$1\frac{1}{4}$ " "	3.10	3.45	3.75	4.35	5.00	5.60	7.00	8.60	11.25		
$1\frac{1}{2}$ " "	3.45	3.75	4.05	4.70	5.30	5.95	7.35	9.00	11.90	15.00	
$1\frac{3}{4}$ " "		4.05	4.35	5.00	5.60	6.25	7.75	9.35	12.50	15.60	
2 " "			4.70	5.45	6.25	6.85	8.45	10.00	13.45	16.25	
$2\frac{1}{4}$ " "				5.95	6.85	7.50	9.05	10.60	14.35	17.20	
$2\frac{1}{2}$ " "					7.50	8.10	9.70	11.25	15.00	18.10	
$2\frac{3}{4}$ " "						8.75	10.30	11.90	15.90	19.05	
3 " "							10.95	12.50	16.85	20.00	
No. Threads to in 40	30	20	18	16	14	12or13	12	11	10		
Extra for ea. $\frac{1}{4}$ in	\$0.30	.40	.50	.60	.80	1.00	1.30	1.60	2.00	2.40	

# THUMB SCREWS, MACHINE SCREWS, ETC.

## THUMB SCREW BLANKS.

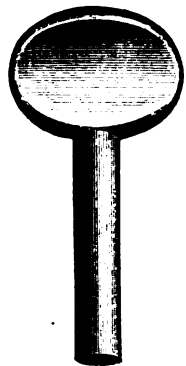


Fig. 2638.

Sizes Made.

Diam.	Length.
$\frac{1}{2}$ inch....	$\frac{1}{2}$ in. to 5 ins.
$\frac{3}{4}$ " " " "	" " " "
$\frac{1}{2}$ " " " "	" " " "
$\frac{1}{4}$ " " " "	" " " "

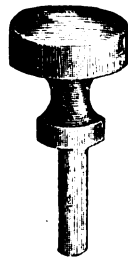


Fig. 2639.

Cut is full size.  
Only one size made.

## THUMB NUT BLANK.

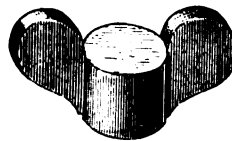


Fig. 2640.

Sizes and Prices.

No. 0, will tap for $\frac{3}{16}$ in. bolt.	Each \$0.04
" 1, " " $\frac{1}{8}$ " " " "	.04 $\frac{1}{2}$
" 2, " " $\frac{3}{16}$ " " " "	.05
" 3, " " $\frac{1}{2}$ " " " "	.06
" 4, " " $\frac{3}{4}$ " " " "	.08



Fig. 2641.

Sizes Made.

Diam.	Length.
$\frac{1}{8}$ inch....	$\frac{1}{2}$ in. to 5 ins.

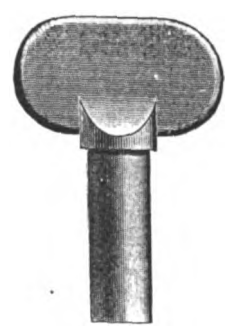


Fig. 2642.

Sizes Made.

Diam.	Length.
$\frac{1}{8}$ inch....	$\frac{1}{2}$ in. to 1 $\frac{1}{2}$ ins.
$\frac{1}{4}$ " " " "	" " " "
$\frac{3}{8}$ " " " "	" " " "
$\frac{1}{2}$ " " " "	" " " "
$\frac{3}{4}$ " " " "	" " " "
$\frac{1}{2}$ & $\frac{1}{4}$ in....	" " " "
$\frac{3}{8}$ , $\frac{1}{2}$ & $\frac{1}{4}$ in....	" " " "
$\frac{1}{2}$ , $\frac{3}{4}$ & $\frac{1}{2}$ in....	" " " "

## DROP FORGED THUMB SCREW BLANKS.

In addition to pattern shown, Figs. 2638, 2639, 2641 and 2642, I can furnish Thumb Screw Blanks of any desired style and size.

Special prices quoted on application.

## DROP FORGED STEEL THUMB SCREWS.

### Shoulder Screw.

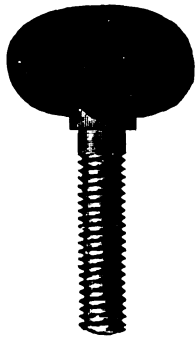


Fig. 2643.

### Black Heads.

#### Price Per Hundred. Threaded.

Length, under Head, ins.	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$	4
No. 0, 1-8 in. diam.....	\$2.80	3.00	3.20	3.40	3.60	3.80	4.00									
" 1, 3-16 " " " " " " " " " "	4.00	4.20	4.40	4.60	4.80	5.00	5.20	5.40								
" 2, 1-4 " " " " " " " " " "	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40								
" 3, 5-16 " " " " " " " " " "	5.20	5.50	6.00	6.50	7.00	7.50	8.00	8.50	9.00	9.50	10.00	10.50	11.00	11.50	12.00	12.50
" 4, 3-8 " " " " " " " " " "	6.50	7.00	7.50	8.00	8.50	9.00	9.50	10.00	10.50	11.00	11.50	12.00	12.50	13.00	13.50	14.00
" 5, 7-16 " " " " " " " " " "				10.00	10.50	11.00	11.50	12.00	12.50	13.00	13.50	14.00	14.50	15.00	15.50	16.00
" 6, 1-2 " " " " " " " " " "				12.00	12.50	13.00	13.50	14.00	14.50	15.00	15.50	16.00	16.50	17.00	17.50	18.00
" 7, 9-16 " " " " " " " " " "				11.00	11.50	12.00	12.50	13.00	13.50	14.00	14.50	15.00	15.50	16.00	16.50	17.00
" 8, 5-8 " " " " " " " " " "				16.00	16.50	17.00	17.50	18.00	18.50	19.00	19.50	20.00	20.50	21.00	21.50	22.00

In ordering state which pattern is wanted and give number of Threads to the inch.

### Set Screw.

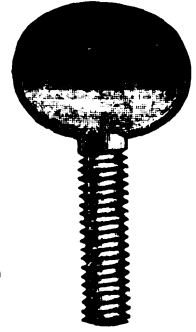


Fig. 2644.

## IRON AND BRASS MACHINE SCREWS.

### Round Head.



Fig. 2645.

### Flat Head.



Fig. 2646.

### Fillister Head.



Fig. 2647.

### Prices, Iron Machine Screws. Per Gross.

#### ROUND, FLAT OR FILLISTER HEADS.

Numbers....	4	6	8	10	12	14	16	18	20	24
Length.										
$\frac{1}{2}$ inch....	\$0.55	.55	.65							
$\frac{3}{4}$ " " " "	.55	.55	.65							
$\frac{1}{2}$ " " " "	.55	.55	.65	.75	.85	.95	1.05	1.15	1.20	
$\frac{3}{4}$ " " " "	.55	.55	.65	.75	.85	.95	1.05	1.15	1.20	
$\frac{1}{2}$ " " " "			.65	.75	.85	.95	1.05	1.10	1.25	1.50
$\frac{3}{4}$ " " " "			.65	.75	.85	.95	1.05	1.10	1.25	1.60
$\frac{1}{2}$ " " " "			.95	.85	.95	1.05	1.10	1.15	1.30	1.70
1 " " " "				1.00	1.20	1.25	1.35	1.45	1.90	
1 $\frac{1}{4}$ " " " "					1.30	1.35	1.45	1.60	2.00	
1 $\frac{1}{2}$ " " " "						16				
Standard	32			24						
Threads to	36	30	30	30	20	20	18	16	16	14
the inch..	40	32	32	32	24	24	20	18	18	16

### Prices, Brass Machine Screws. Per Gross.

#### ROUND, FLAT OR FILLISTER HEADS.

Numbers....	4	6	8	10	12	14	16	18	20	24
Length.										
$\frac{1}{2}$ inch....	\$0.70	.80	1.10							
$\frac{3}{4}$ " " " "	.70	.80	1.10							
$\frac{1}{2}$ " " " "	.70	.80	1.10	1.45	1.70	2.00	2.30			
$\frac{3}{4}$ " " " "	.70	.80	1.15	1.45	1.70	2.00	2.30	3.30	3.70	
$\frac{1}{2}$ " " " "			1.20	1.55	1.80	2.20	2.50	3.30	3.70	
$\frac{3}{4}$ " " " "			1.25	1.65	1.95	2.40	2.70	3.60	4.00	6.30
$\frac{1}{2}$ " " " "				1.75	2.10	2.55	2.95	3.90	4.40	6.30
1 " " " "				1.90	2.30	2.75	3.20	4.15	4.70	6.90
1 $\frac{1}{4}$ " " " "					2.70	3.25	3.75	4.80	5.50	7.80
1 $\frac{1}{2}$ " " " "						3.70	4.30	5.45	6.30	8.05
Standard	32			24						
Threads to	36	30	30	30	20	20	18	16	16	14
the inch..	40	32	32	32	24	24	20	18	18	16

Iron and Brass Machine Screws made any desired length, diameter or style of head desired. Special prices on application.

## ROUND AND FLAT HEAD, NICKEL PLATED, GIMLET POINTED SCREWS.

### Nickel Plated on Iron. Per Gross.

Numbers....	4	5	6	7	8	9	10	11	12	14	Numbers....	7	8	9	10	11	12	13	14	16	18
Length.											Length.										
$\frac{1}{2}$ inch....	\$1.45	1.45	1.45	1.45	1.45	1.50	1.60	1.63	1.85	2.05	$\frac{1}{2}$ inches..	\$1.88	1.94	2.05	2.15	2.38	2.50	2.85	3.15	4.00	4.85
$\frac{3}{4}$ " " " "	1.45	1.45	1.45	1.45	1.45	1.55	1.63	1.70	1.90	2.15	1 $\frac{1}{4}$ " " "	2.15	2.20	2.30	2.40	2.55	2.80	3.12	3.45	4.20	5.10
$\frac{1}{2}$ " " " "	1.45	1.45	1.45	1.45	1.45	1.50	1.57	1.70	1.90	2.15	2 " " "			2.40	2.50	2.70	3.00	3.45	3.75	4.45	5.55
$\frac{3}{4}$ " " " "			1.45	1.50	1.55	1.61	1.70	1.90	2.20	2.75	2 $\frac{1}{4}$ " " "				2.85	3.00	3.25	3.75	4.00	4.80	6.10
1 " " " "			1.50	1.55	1.55	1.68	1.75	1.95	2.25	2.80	2 $\frac{1}{2}$ " " "				3.45	3.55	3.65	4.00	4.25	5.10	6.65
1 $\frac{1}{4}$ " " " "			1.55	1.55	1.65	1.80	1.95	2.10	2.30	2.95	3 " " "								5.00	6.20	8.05

Round and Flat Head Nickel Plated Screws, nickel plated on brass. Prices on application.



### Flat Head.



**Fig. 2648.**

### Round Head.



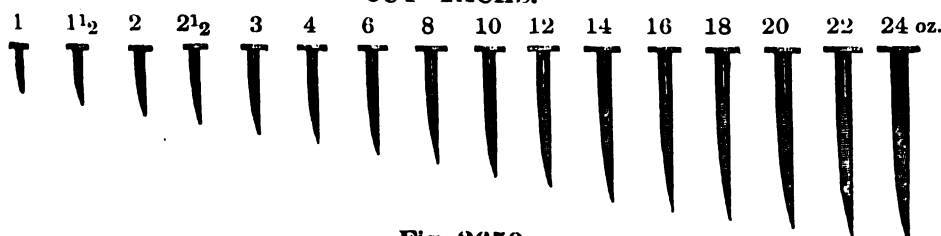
**Fig. 2649.**

**Price per Gross.**[illegible]**Price Per Gross.**

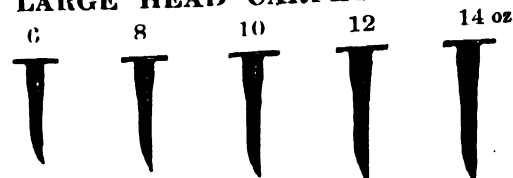
		Price Per Gross.																					
Length.	Nos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20	22	24	26
$\frac{3}{8}$ inch	.....	\$0.53	.56	.58	.62	.67	.71	.78															
$\frac{1}{2}$ "	.....		.58	.61	.67	.71	.79	.86	.98	1.09	1.23												
$\frac{5}{8}$ "	.....		.59	.64	.70	.78	.86	.96	1.09	1.23	1.40	1.56	1.75										
$\frac{3}{4}$ "	.....						.93	1.04	1.22	1.38	1.57	1.75	1.97	2.18	2.43	2.68	2.96						
$\frac{7}{8}$ "	.....					.74	.83																
1 "	.....						1.01	1.16	1.35	1.53	1.73	1.95	2.18	2.42	2.69	2.98	3.29						
$1\frac{1}{4}$ "	.....						1.10	1.27	1.48	1.68	1.91	2.14	2.40	2.67	2.97	3.28	3.62		4.35				
$1\frac{1}{2}$ "	.....							1.47	1.73	1.97	2.23	2.52	2.83	3.16	3.51	3.88	4.29	4.71	5.16	6.12			
$1\frac{3}{4}$ "	.....								1.98	2.26	2.58	2.92	3.28	3.67	4.08	4.52	5.00	5.49	6.01	7.13			
2 "	.....									2.54	2.91	3.30	3.72	4.17	4.64	5.17	5.68	6.25	6.84	8.13	9.53	11.07	
$2\frac{1}{4}$ "	.....										3.26	3.70	4.18	4.68	5.21	5.78	6.38	7.01	7.69	9.12	10.70	12.42	
$2\frac{1}{2}$ "	.....												4.63	5.19	5.78	6.42	7.07	7.79	8.53	10.12	11.87		
$2\frac{3}{4}$ "	.....														6.35	7.04	7.78	8.55	9.38	11.13	13.04	15.12	
3 "	.....																9.17		11.05	13.12	15.37	17.82	20.47

Brass and Silver Capped Screws, Blued Screws, Bronzed Screws, Japanned Screws, Lacquered Screws, Tinned Screws, Copper Screws, Bronzed Screws and Phosphor Bronze Screws. Prices on application.

**LARGE HEAD CARPET TACKS.**



**Fig. 2650.**



**Fig. 2051.**

**Fig. 2651.**  
Above Carpet Tacks only made 4, 6, 8, 10, 12, 14,  
16, 18 and 20 ounce.

**Prices, Cut Tacks and Large Head Carpet Tacks. Per Dozen Papers.**

				Prices, Cut Tacks and Large Head Carpet Tacks.						Per Dozen Papers.									
Ounce				1	1½	2	2½	3	4	6	8	10	12	14	16	18	20	22	24
American Iron,	Full Weight			\$0.80	.90	.90	1.00	1.10	1.20	1.30	1.50	1.80	2.10	2.40	2.70	3.00	3.30	3.60	3.90
"	"	Half	"	.45	.50	.50	.55	.60	.65	.70	.80	.95	1.10	1.25	1.40	1.55	1.70	1.85	2.00
Swedes	"	Full	"	.80	.90	1.00	1.10	1.20	1.40	1.60	1.90	2.30	2.70	3.10	3.40	3.80	4.20	4.60	5.00
"	"	Half	"	.45	.50	.55	.60	.65	.75	.85	1.00	1.20	1.40	1.60	1.75	1.95	2.15	2.35	2.55

**Prices, Tinned Large Head Carpet Tacks. Per Dozen Papers.**

AMERICAN IRON.										SWEDISH IRON.									
Ounce.....	4	6	8	10	12	14	16	18	20	Ounce.....	4	6	8	10	12	14	16	18	20
Half weight..	\$0.95	1.05	1.15	1.40	1.60	1.85	2.10	2.35	2.60	Full weight..	\$2.10	2.50	2.80	3.40	4.00	4.50	5.00	5.70	6.30
Quarter "	..	.50	.55	.60	.75	.85	1.00	1.10	1.20	Half "	..	1.10	1.30	1.45	1.75	2.05	2.30	2.55	2.90

**Prices, Leather Head Carpet Tacks. Per Dozen Papers.**

Prices, Leather Head Stamp Tickets.		Per Dozen Papers.				
Ounce.....	4	6	8	10	12	14
Full Count (144 tickets to paper).....	\$0.30	.32	.34	.36	.38	.40
3/4 " (100 " " " " ).....	.24	.26	.28	.30	.32	.34

[illegible]

Length, inches .....	12	58	34	78	1	118	114	138	138
Per lb.....	\$0.56	.56	.56	.56	.56	.56	.56	.56	.56

Packed in 1/2 lb., 1 lb. papers, or in bulk.

## COMMON AND PATENT BRADS.

	3 <sub>8</sub>	1 <sub>2</sub>	5 <sub>8</sub>	3 <sub>4</sub>	7 <sub>8</sub>	1	1 <sub>1</sub> <sub>8</sub>	1 <sub>1</sub> <sub>4</sub>	1 <sub>1</sub> <sub>2</sub>	1 <sub>3</sub> <sub>4</sub>	1 <sub>3</sub> <sub>8</sub>
Length, inch.....											
Full Weight, per dozen papers.....	\$1.20	1.30	1.44	1.60	1.80	2.00	2.24	2.52	3.64	4.50	4.86
Half " " "	.60	.65	.72	.80	.90	1.00	1.12	1.26	1.82	2.25	2.43
1 Pound Papers or Bulk, per pound.....	.80	.58	.48	.36	.30	.26	.25	.24	.22	.20	.18

## FINISHING NAILS.

FINISHING NAILS.												
Length, inch.....	3 <sub>8</sub>	1 <sub>2</sub>	5 <sub>8</sub>	3 <sub>4</sub>	7 <sub>8</sub>	1	1 <sup>1</sup> <sub>8</sub>	1 <sup>1</sup> <sub>4</sub>	1 <sup>1</sup> <sub>2</sub>	1 <sup>3</sup> <sub>4</sub>	2	2 <sup>1</sup> <sub>4</sub>
In Pound Papers or in Bulk, per pound.....	\$0.48	.32	.26	.22	.20	.18	.16	.16	.16	.16	.16	.16

**TRUNK AND CLOUT NAILS.**

[illegible]

Iron, in Round Nails, 3 in. long, per 100 lbs.	.60	.42	.36	.31	.29	.27	.25	.25	.25	.25	.25	.25	.25	.25
Tinned														
Gimp and Lace Tacks, Looking Glass Tacks, Large Head Miners' Tacks, Cigar Box Nails, Chair Nails, Hungarian Nails, Shoe Nails, Hob Nails, Lining Nails, Furniture Nails, China Nails and Glaziers' Points.														
Prices on application.														

## NAILS, SPIKES, ETC.

## 8d COMMON CUT NAIL.



Fig. 2652.

## Prices, Common Cut Nails.

12d to 40d.....	Base price.
10d.....	extra per keg, \$0.10
8d, 9d, 50d, 60d and 70d.....	" " .25
6d and 7d.....	" " .40
4d and 5d.....	" " .60
3d.....	" " 1.00
3d fine and 2d.....	" " 1.50
2d fine.....	" " 2.00

## Prices, Cut Spikes.

Add to base price of Common Cut Nails.  
3 to 8 inches, all sizes.....extra per keg, \$0.25

## Prices, Slating Nails.

Sizes.....	3d	4d	5d	6d	7d
Add to base price.....	\$1.25	.85	.85	.65	.65

## RAILROAD AND MINING SPIKES.

Size Under Head. Inches.	Average No. per Keg of 200 Pounds.	Rail Used. Weight per Yard.	Size Under Head. Inches.	Average No. per Keg of 200 Pounds.	Rail Used. Weight per Yard.
3 x 2 1/2	1342	8 to 12 lbs.	3 x 4 1/2	680	20 to 30 lbs.
3 x 3	1240	16 to 20 "	3 x 4	600	24 to 35 "
3 x 3 1/2	1190	16 to 20 "	3 x 4 1/4	530	28 to 35 "
3 x 4	1000	16 to 25 "	3 x 5	450	35 to 40 "
3 x 3 1/2	900	16 to 25 "	3 x 5 1/2	400	40 to 56 "
3 x 4	720	20 to 30 "	3 x 5 1/4	360	45 to 70 "

Prices on application.

## 2 1/2 INCH CLINCH NAIL.



Fig. 2653.

## Prices, Barrel and Roofing Nails.

Add to base price.

Length, ins....	3 1/4	7 1/8	1	1 1/8 & 1 1/4	1 3/8 & 1 1/2
Add per keg.....	\$2.25	1.75	1.50	1.00	.60

## Prices, Clinch Nails.

Add to base price.

Length, ins.	1 1/2 & 1 3/4	2 & 2 1/4	2 1/2 & 2 3/4	3 & 3 1/2 & larger
Add per keg.	\$1.35	1.15	1.00	.85 .75
Clinch Nails in half kegs.....	extra per keg, \$0.25			

## Standard Lengths Cut Nails.

Nails.....	2d	3d	4d	5d	6d	7d	8d	9d
Inches.....	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4
Nails.....	10d	12d	16d	20d	30d	40d	50d	60d
Inches.....	3	3 1/4	3 1/2	4	4 1/2	5	5 1/2	6

## Prices, Fencing and Sheathing Nails.

Same price as same size of Common Cut Nails.

## Prices, Coopers', Tobacco, Casing, Flooring and Box Nails.

Add to base price.

Sizes.....	3d	4d	5d	6d	7d	8d	10d	12d & larger.
Add per keg.....	\$1.50	1.10	.90	.75	.60	.50		

## Prices, Cut Finishing Nails.

Add to base price.

Sizes.....	4d	5d	6d	7d	8d	10d	12d & larger.
Add per keg.....	\$1.35	1.15	1.00	.85	.75		

## Prices, Fine Cut Finishing Nails.

Add to base price.

Sizes.....	4d	5d	6d	7d	8d	10d	12d & larger.
Add per keg.....	\$1.50	1.30	1.15	1.00	.90		

## BOAT AND SHIP SPIKES.

NUMBER PER KEG OF 150 POUNDS.

Diam. in....	1/4	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2
Length.								
3 inches.....	2250							
3 1/2 ".....	1890	1208						
4 ".....	1650	1135						
4 1/2 ".....	1464	1064						
5 ".....	1380	930	742					
6 ".....	1292	868	570					

Prices on application.

## GALVANIZED NAILS AND SPIKES.

Galvanized Nails and Spikes of all kinds at lowest market rates. Special prices on application.

## STEEL WIRE NAILS AND BRADS.

## 8d Common Nail.



Fig. 2654.

## Common, Fence, Shingle, Flooring and Common Brads.

12d to 40d.....	Base.
10d.....	add per keg, \$0.15
8d, 9d, 50d & 60d.....	" " .35
6d and 7d.....	" " .70
4d and 5d.....	" " 1.00
3d.....	" " 2.00
2d.....	" " 2.75

## Barbed Common and Barbed Car Nails.

25 cents advance over common.

## Clinch Nails.

2d.....	add per keg, \$3.50
3d.....	" " 2.50
4d and 5d.....	" " 1.75
6d and 7d.....	" " 1.25
8d and 9d.....	" " 1.00
10d.....	" " .90
12d to 20d.....	" " .75

## Casing Nails, Smooth Box.

12d to 40d.....	add per keg, \$0.75
10d.....	" " 1.00
8d and 9d.....	" " 1.25
6d and 7d.....	" " 1.50
4d and 5d.....	" " 1.75
3d.....	" " 2.50
2d.....	" " 3.25

Barbed Box Nails 25 cents advance.

## Smooth Finishing Nails.

2d.....	add per keg, \$3.50
3d.....	" " 2.75
4d and 5d.....	" " 2.00
6d and 7d.....	" " 1.75
8d and 9d.....	" " 1.50
10d.....	" " 1.25
12d to 20d.....	" " 1.00

Barbed Finishing Nails 25c. advance.

## Wire Spikes.

All sizes.....add per keg, \$0.35

## Barrel Nails.

3 1/4 inch.....	add per keg, \$3.50
7 1/8 ".....	" " 3.00
1 ".....	" " 2.50
1 1/8 ".....	" " 2.00
1 1/4 ".....	" " 1.75
1 3/8 ".....	" " 1.25
1 1/2 ".....	" " 1.00

## Barbed Roofing Nails.

3 1/4 inch.....	add per keg, \$3.50
7 1/8 ".....	" " 3.00
1 ".....	" " 2.50
1 1/8 ".....	" " 2.00
1 1/4 ".....	" " 1.50
1 3/8 ".....	" " 1.25
1 1/2 ".....	" " 1.00

## Fine Nails.

2d.....	add per keg, \$3.50
3d.....	" " 3.00
4d.....	" " 2.00

## 8d Car Nail.



Fig. 2656.

## SCHEDULE OF EXTRAS ON STEEL WIRE NAILS, 12d TO 40d COMMON BEING BASE.

## Slating Nails.

2d.....	add per keg, \$2.50
3d.....	" " 1.75
4d.....	" " 1.25
5d.....	" " 1.00

## Tobacco Nails.

4d and 5d.....	add per keg, \$1.25
6d and 7d.....	" " 1.00
8d and 9d.....	" " .75
10d.....	" " .50

## Wire Hinge Nails.

4d.....	add per keg, \$1.75
6d.....	" " 1.50
8d.....	" " 1.00
10d to 20d.....	" " .75

## Lining Nails.

3 1/4 inch.....	add per keg, \$4.50
7 1/8 ".....	" " 4.00
1 ".....	" " 3.50

## MISCELLANEOUS WIRE NAIL LIST. Per Pound.

Wire Nos.	4	6	8	9	10	11	12	13	14	15	16	17	18	20
Length.														
1 1/4 inch.. \$0														
3 1/8 " ..														
1 1/2 " ..														
5 1/8 " ..														
3 1/4 " ..														
7 1/8 " ..														
1 " ..														
1 1/8 " ..														
1 1/4 " ..														
1 3/8 " ..														
1 1/2 " ..														

For Barbing, Annealing, Oval Heads or special point add to above lists 1 cent per pound. For nails combining several specialties add 1 cent for each specialty. Special nails subject to special discount. For Tinning add 50 per cent to list.

## HORSE SHOE NAILS.

## Ausable Horse Shoe Nails.

Nos.....	2	3	4	4 1/2	5	6	7	8	9	10	11	12
Per lb.....	\$2.00	1.00	.50	.40	.31	.28	.26	.25	.24	.23	.23	.23

## Essex Horse Shoe Nails.

Nos.....	5	6	7	8	9	10
Per lb.....	\$0.31	.28	.26	.25	.24	.23

## FENCE WIRE, WIRE, ETC.

BARBED FENCE WIRE. 4 BARB.

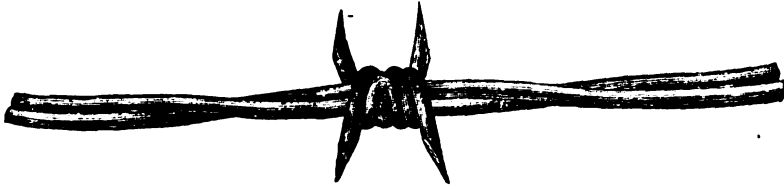


Fig. 2657.

BARBED FENCE WIRE. 2 BARB.



Fig. 2658.

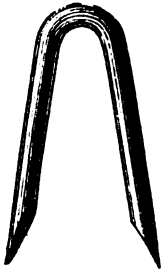
FENCE STAPLE.  
For Barbed Wire.

Fig. 2660.

1 to 13 $\frac{1}{2}$  ins. No. 9 Wire.  
Black, per lb....\$0.08  
Galvanized, " .... .09

TWISTED RIBBON FENCE WIRE.



Fig. 2659.

## Prices, Fence Wire.

Barbed Wire, Painted, 2 or 4 points, for Cattle or Hogs.....	per lb., \$....
" " Galvanized, " " " " " " .....	" .....
Twisted Cable, Galvanized (2 strands No. 12 $\frac{1}{2}$ wire, no barbs).....	" .....
Flat Steel Twisted Ribbon Fencing, Painted.....	" .....
" " " " " Galvanized.....	" .....

## Prices, Steel Fence Posts.

Steel Fence Posts, Painted. Each....	\$0.10	Steel Fence Posts, Galvanized. Each..	\$0.13 $\frac{1}{2}$
--------------------------------------	--------	---------------------------------------	----------------------

## Prices, Fence Wire Stretchers.

Little Giant Stretchers, per doz.....	\$12.00	Hercules Stretchers, per doz.....	\$2.25
---------------------------------------	---------	-----------------------------------	--------

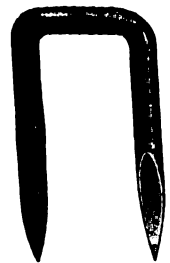
FENCE STAPLE.  
For Ribbon Wire.

Fig. 2661.

1 to 13 $\frac{1}{2}$  ins. No. 9 Wire  
Black, per lb....\$0.08  
Galvanized, " .... .09

## GALVANIZED TELEGRAPH AND TELEPHONE WIRE.



Fig. 2662.

## SIZES OF WIRE USED IN TELEGRAPH AND TELEPHONE LINES.

- No. 4. Used on important lines where the multiplex systems are applied.  
" 5. Used but little in the United States.  
" 6. Used for important circuits between cities.  
" 8. Medium size for circuits of 400 miles or less.  
" 9. For same use as No. 8. but shorter circuits.

- No. 10. { For short circuits, railway telegraphs, private, police and fire  
" 11. { alarm lines, etc.  
" 12. For telephone, police and fire alarms, etc.  
" 13. { For telephone and short private lines. Steel wire is generally used in  
" 14. { these two sizes.

Prices quoted on application.

## IRON, STEEL, BRASS AND COPPER WIRE.

Gauge Sizes of Iron and Steel Wire.	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Numbers.....	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Fig. 2663.

## Prices, Iron Market Wire, 63 lbs. in a Bundle.

Numbers.....	0000 to 2	3 to 9	10 & 11	12	13 & 14	15 & 16	17	18	Numbers.....	12 in. to No. 6	7 to 9	10 to 11	12	13	14	15	16	17	18	19	20
Per lb.....	\$0.10	.10	.11	.11 $\frac{1}{2}$	.12 $\frac{1}{2}$	.14	.15	.16	Per lb.....	\$0.23	.24	.25	.26	.28	.30	.32	.33	.34	.36	.38	.40

## Prices, Annealed Steel Wire, 12 lbs. in a Stone.

Numbers.....	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Per lb.....	\$0.14	.15	.16	.19	.20	.21	.22	.23	.24	.25	.26	.28	.29	.30	.32	.33	.35	.37	.40	.45	.55

Bright, Annealed, Coppered and Galvanized Wire all sold from list of Iron Market Wire.

## Prices, Tinned Iron Wire, in 12 lb. Stones.

Numbers.....	0 to 9	10 & 11	12, 13 & 14	15 & 16	17	18	19 & 20	21 & 22	23 & 24	25	26	27	28	29	30	32	34	36
Per lb.....	\$0.15	.16	.17	.17 $\frac{1}{2}$	.18	.18 $\frac{1}{2}$	.19	.20	.21	.22	.23	.24	.25	.26	.27	.32	.34	.48

## Prices, Brass and Copper Wire.

	All Nos. to Nos.	No. 16	No. 17	No. 18	No. 19	No. 20	No. 21	No. 22	No. 23	No. 24	No. 25	No. 26	No. 27	No. 28	No. 29	No. 30	No. 32	No. 34	No. 36
Old English Gauge.....	per lb.....	\$0.22	.23	.24	.25	.26	.27	.28	.30	.32	.35	.38	.42	.45	.48				
High Brass Wire.....	" .....	.24	.25	.26	.27	.28	.30	.32	.34	.37	.40	.44	.47	.50					
High Brass Spring Wire.....	" .....	.26	.27	.28	.29	.30	.32	.34	.36	.39	.42	.46	.49	.52					
Low Brass Wire.....	" .....	.30	.31	.32	.33	.34	.36	.38	.40	.43	.46	.51	.54	.62					
Copper Wire.....	" .....	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12					
Spool Wire (1 lb. spool) add to list	" .....																		

## HIGH BRASS RODS.

## Not Less than 2 foot Lengths. Price per Pound.

1 $\frac{1}{4}$ inch to inch diameter, both inclusive, per lb.....	\$0.24	No. 8, Stub's Gauge, and less than 1 $\frac{1}{4}$ inch diameter, per lb.....	\$0.26
Over 1 inch diameter, " .....	.27	Smaller than No. 8, Stub's Gauge, " .....	.30

## WAX FLOWER WIRE ON SPOOLS.

Wire Numbers.....	28	30	32	34	36	Wire Numbers.....	28	30	32	34	36
Plain Wire, per gross spools.....	\$3.50	3.75	4.00	4.25	5.25	Silvered Wire, per gross spools....	\$1.25	1.50	1.75	5.00	6.00

## GALVANIZED WIRE CLOTHES LINES.

No.	18	19	20	100 feet in a Coil. Per dozen coils.
No. 18. 6 Strands of No. 18 wire and 1 of hemp, per doz.....				\$8.70
" 19. 6 " " " 19 " " 1 " " " .....				7.20
" 20. 6 " " " 20 " " 1 " " " .....				6.00

## BRAIDED WIRE PICTURE CORD.

Numbers.....	0	1	2	3	4	5
Tinned, per doz....	\$1.20	1.80	3.00	3.60	4.80	6.00
Gilt, " ....	4.20	7.20	10.20	15.00	18.00	24.00

WIRE CLOTH, SHEET IRON, ETC.

WIRE CLOTH.  
No. 4 Mesh, No. 14 Wire.

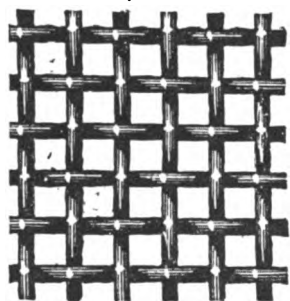


Fig. 2064.

TINNED WIRE CLOTH.  
Same list prices as Iron Wire Cloth.

GALVANIZED WIRE CLOTH.  
Same list prices as Iron Wire Cloth.

CRIMPED LOCOMOTIVE SPARK WIRE CLOTH OF  
STEEL OR IRON WIRE.

No.	Mesh, No.	Wire	Per sq. ft.	No.	Mesh, No.	Wire	Per sq. ft.
No. 2	Mesh, No. 9	Wire	\$0.48	No. 5x2	Mesh, No. 14	Wire	\$0.35
" 2 <sup>1</sup> / <sub>2</sub>	" " 10	"	.48	" 5	" " 15	"	.38
" 3	" " 11	"	.48	" 6	" " 16	"	.38
" 3 <sup>1</sup> / <sub>2</sub>	" " 12	"	.38	" 8	" " 18	"	.38
" 4	" " 13	"	.38	" 10	" " 19	"	.48
	" " 14	"	.38	" 12	" " 20	"	.48

TWILLED SPARK WIRE CLOTH.

No.	Mesh, No.	Wire	Per sq. ft.	No.	Mesh, No.	Wire	Per sq. ft.
No. 4	Mesh, No. 17	Wire	\$0.22	No. 8	Mesh, No. 21	Wire	\$0.22
" 5	" " 18	"	.22	" 10	" " 23	"	.22
" 6	" " 19	"	.22	" 12	" " 24	"	.22

REGULAR IRON WIRE COAL SCREEN GRADE OF  
SCREEN CLOTH.

No.	Mesh, No.	Wire	Per sq. ft.	No.	Mesh, No.	Wire	Per sq. ft.
2 <sup>1</sup> / <sub>2</sub> inch space,	No. 000	Wire	\$0.75	1 inch space,	No. 3	Wire	\$0.64
2 <sup>1</sup> / <sub>4</sub> " " " 00	"	"	.64	3/4 " " " 6	"	"	.48
2 " " " 0	"	"	.64	3/8 " " " 8	"	"	.48
1 <sup>3</sup> / <sub>4</sub> " " " 0	"	"	.72	1/2 " " " 10	"	"	.40
1 <sup>1</sup> / <sub>2</sub> " " " 1	"	"	.64	3/8 " " " 11	"	"	.40
1 <sup>1</sup> / <sub>4</sub> " " " 2	"	"	.64	1/4 " " " 13	"	"	.40

WIRE CLOTH.  
No. 6 Mesh, No. 16 Wire.

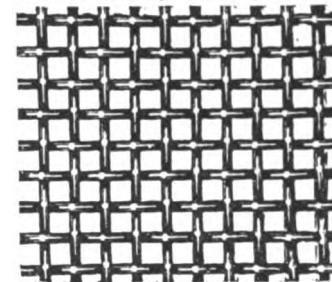


Fig. 2065.

WIRE WINDOW SCREEN  
WIRE CLOTH.

	Per sq. ft.
Green, Drab or Black	\$0.03
Figured, Green or Drab	.05
Landscape	.12

STEEL TEMPERED BOLTING CLOTH FOR SCREENING ORE, Etc.

EXTRA HEAVY.				MACHINERY GRADE.				HEAVY GRADE.				FOUNDRY GRADE.			
No.	Mesh, No.	Wire	Per sq. ft.	No.	Mesh, No.	Wire	Per sq. ft.	No.	Mesh, No.	Wire	Per sq. ft.	No.	Mesh, No.	Wire	Per sq. ft.
No. 4	Mesh, No. 12	Wire	\$0.60	No. 2	Mesh, No. 11	Wire	\$0.32	No. 2	Mesh, No. 12	Wire	\$0.27	No. 2	Mesh, No. 14	Wire	\$0.17
" 5	" " 13	"	.60	" 2 <sup>1</sup> / <sub>2</sub>	" " 12	"	.32	" 2 <sup>1</sup> / <sub>2</sub>	" " 13	"	.27	" 2 <sup>1</sup> / <sub>2</sub>	" " 15	"	.17
" 6	" " 14	"	.60	" 3	" " 13	"	.32	" 3	" " 14	"	.27	" 3	" " 16	"	.17
" 7	" " 15	"	.60	" 3 <sup>1</sup> / <sub>2</sub>	" " 14	"	.32	" 3 <sup>1</sup> / <sub>2</sub>	" " 15	"	.27	" 3 <sup>1</sup> / <sub>2</sub>	" " 17	"	.17
" 8	" " 16	"	.60	" 4	" " 15	"	.32	" 4	" " 16	"	.27	" 4	" " 18	"	.17
" 9	" " 17	"	.60	" 5	" " 16	"	.32	" 5	" " 17	"	.27	" 5	" " 19	"	.17
" 10	" " 18	"	.60	" 6	" " 17	"	.32	" 6	" " 18	"	.27	" 6	" " 20	"	.17
" 12	" " 19	"	.60	" 8	" " 19	"	.32	" 8	" " 20	"	.27	" 8	" " 22	"	.17
" 14	" " 20	"	.60	" 10	" " 21	"	.32	" 10	" " 22	"	.27	" 10	" " 24	"	.17
" 16	" " 22	"	.60	" 12	" " 22	"	.32	" 12	" " 23	"	.27	" 12	" " 25	"	.17
" 18	" " 23	"	.60	" 14	" " 23	"	.32	" 14	" " 24	"	.27	" 14	" " 26	"	.17
" 20	" " 24	"	.62	" 16	" " 24	"	.32	" 16	" " 25	"	.27	" 16	" " 27	"	.17
" 24	" " 26	"	.65	" 18	" " 25	"	.32	" 18	" " 26	"	.27	" 18	" " 28	"	.17
" 30	" " 28	"	.66	" 20	" " 27	"	.35	" 20	" " 28	"	.27	" 20	" " 31	"	.17

No length less than 100 feet shall be understood to be a roll.

Prices on Smut, Bolting, Malt Kiln, also Brass and Copper Wire Cloth furnished on application.

BLACK AND GALVANIZED CORRUGATED SHEET IRON FOR ROOFING, Etc.

Regular Sizes of Sheets.

20<sup>1</sup>/<sub>2</sub>, 22, 25, 26<sup>1</sup>/<sub>2</sub> x 84 ins.

Pattern Sizes

At 1c per pound extra.

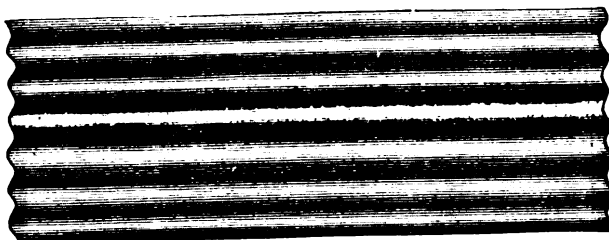


Fig. 2066.

Painting Both Sides,

1 cent per square foot.

Extra net.

Prices, Black.											
No. Wire Gauge	16	17	18	19	20	21	22	23	24	25	26
Per Pound	\$0.09 <sup>1</sup> / <sub>4</sub>	.09 <sup>1</sup> / <sub>2</sub>	.09 <sup>1</sup> / <sub>2</sub>	.09 <sup>1</sup> / <sub>2</sub>	.09 <sup>1</sup> / <sub>2</sub>	.09 <sup>1</sup> / <sub>2</sub>	.09 <sup>1</sup> / <sub>2</sub>	.10	.10	.10 <sup>1</sup> / <sub>2</sub>	.10 <sup>1</sup> / <sub>2</sub>
Nominal Weight per sq. ft.—Oz.	53	47	39	32	29	25	23	21	19	17	16

Prices, Galvanized.											
No. Wire Gauge	16	17	18	19	20	21	22	23	24	25	26
Per Pound	\$0.12 <sup>1</sup> / <sub>2</sub>	.12 <sup>3</sup> / <sub>4</sub>	.12 <sup>3</sup> / <sub>4</sub>	.13	.13	.14	.14	.14	.14	.15	.15
Nominal Weight per sq. ft.—Oz.	54	48	40	34	31	27	25	23	21	19	18

BLACK SHEET IRON.

Common, Charcoal and Refined.

Wire Gauge	Nominal Weight	Best Re-	Charcoal	Common
Thickness.	per square foot.	finer Iron.	Iron.	Iron.
No. 28	9 <sup>1</sup> / <sub>2</sub> oz.	cts.	cts.	cts.
" 27	10 <sup>1</sup> / <sub>2</sub> " "	"	"	"
" 26	12 " "	"	"	"
" 25	13 " "	"	"	"
" 24	14 <sup>1</sup> / <sub>2</sub> " "	"	"	"
" 23	16 <sup>1</sup> / <sub>2</sub> " "	"	"	"
" 22	18 <sup>1</sup> / <sub>2</sub> " "	"	"	"
" 21	20 <sup>1</sup> / <sub>2</sub> " "	"	"	"
" 20	22 <sup>1</sup> / <sub>2</sub> " "	"	"	"
" 19	27 <sup>1</sup> / <sub>2</sub> " "	"	"	"
" 18	31 <sup>1</sup> / <sub>2</sub> " "	"	"	"
" 17	37 <sup>1</sup> / <sub>2</sub> " "	"	"	"
" 16	42 <sup>1</sup> / <sub>2</sub> " "	"	"	"
" 15	46 <sup>1</sup> / <sub>2</sub> " "	"	"	"
" 14	53 <sup>1</sup> / <sub>2</sub> " "	"	"	"
" 13	61 <sup>1</sup> / <sub>2</sub> " "	"	"	"
" 12	70 <sup>1</sup> / <sub>2</sub> " "	"	"	"
" 11	74 " "	"	"	"
" 10	86 <sup>1</sup> / <sub>2</sub> " "	"	"	"

English Refined Sheet Iron and Russia Sheet Iron.  
Prices on application.

GALVANIZED SHEET IRON.

Made of Best Bloom, Refined and Common Iron.

Wire Gauge	Nominal Weight	Price
Thickness.	per square foot.	per lb.
No. 29	12 oz.	\$0.18
" 28	13 " "	.16
" 27	14 " "	.15
" 26	15 " "	.14
" 25	16 " "	.14
" 24	18 " "	.13
" 23	20 " "	.13
" 22	22 " "	.13
" 21	24 " "	.13
" 20	27 " "	.12
" 19	30 " "	.12
" 18	35 " "	.12
" 17	42 <sup>1</sup> / <sub>2</sub> " "	.12
" 16	45 " "	.12
" 15	49 <sup>1</sup> / <sub>2</sub> " "	.12
" 14	55 <sup>1</sup> / <sub>2</sub> " "	.12
" 13	63 <sup>1</sup> / <sub>2</sub> " "	.11
" 12	71 <sup>1</sup> / <sub>2</sub> " "	.10

ORDINARY SIZES.

24 to 32 inches wide, inclusive, in 6, 7 and 8 foot bundles.

EXTREME SIZES.

Nos. 14 to 22	32x120	42x108
" 23&24	32x108	40x 96
" 25,26&27	30x108	36x 96
" 28		32x 96

PLATE TANK IRON AND STEEL.

C. No. 1. C. H. No. 1 C.H. No. 1 Flange  
Best Flange. Best Flange Fire Box. Circles.  
Boiler Iron Stamped and Guaranteed.

SIZES.

<sup>1</sup>/<sub>8</sub> inch to <sup>1</sup>/<sub>2</sub> inch up to 60 inches wide by 144 inches long.  
<sup>1</sup>/<sub>8</sub> inch to <sup>1</sup>/<sub>2</sub> inch, 30 inches and narrower, by 12 to 20 feet long.  
No. 8 to 16 up to 44 inches wide by 15 feet long.  
No. 17 to 20 up to 40 inches wide by 12 feet long.  
Circles <sup>1</sup>/<sub>8</sub> inch to <sup>1</sup>/<sub>2</sub> inch, up to 72 inches diameter.  
Prices on application.

HOOP IRON, GALVANIZED.

<sup>1</sup>/<sub>2</sub>xNo.22, per lb. \$0.18 <sup>1</sup>/<sub>2</sub>xNo.18, per lb. \$0.12  
<sup>1</sup>/<sub>2</sub>x " 22, " .16 <sup>1</sup>/<sub>2</sub>x " 16, " .12  
<sup>1</sup>/<sub>2</sub>x " 22, " .15 <sup>1</sup>/<sub>2</sub>x " 16, " .11  
<sup>1</sup>/<sub>2</sub>x " 19, " .14 <sup>1</sup>/<sub>2</sub>x " 15, " .11  
<sup>1</sup>/<sub>2</sub>x " 18, " .13 <sup>1</sup>/<sub>2</sub>x " 15, " .11  
<sup>1</sup>/<sub>2</sub> cent per pound net extra for each gauge lighter than above indicated.  
Prices of Black Hoop Iron on application.

BAND AND SCROLL IRON.

Black and Galvanized.  
Special prices on application.

# IRON, STEEL, SHEET BRASS AND COPPER, METALS, ETC.

## IRON AND STEEL.

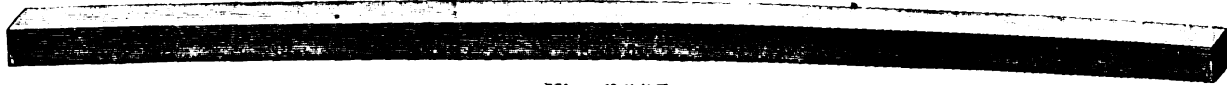


Fig. 2667.

**REFINED IRON.****Base Sizes.**

$\frac{3}{4}$ to 2 ins., round and square.....	per lb., ..c.
$\frac{1}{2}$ to 6x1 in., flat .....	" ..c.

**Extra Sizes, Round and Square.**

$\frac{1}{8}$ inch.....	extra per lb., 2 ..c.
$\frac{1}{4}$ " .....	" " 7 $\frac{1}{2}$ c.
$\frac{3}{8}$ " .....	" " 10c.
$\frac{1}{2}$ " .....	" " 12c.
$\frac{5}{8}$ and $\frac{3}{4}$ inch .....	" " 15c.
2 $\frac{1}{2}$ to 2 $\frac{3}{4}$ " .....	" " 16c.
3 to 3 $\frac{1}{2}$ " .....	" " 17c.
3 $\frac{1}{2}$ to 4 " .....	" " 18c.
4 $\frac{1}{2}$ to 4 $\frac{3}{4}$ " .....	" " 19c.
4 $\frac{3}{4}$ to 5 " .....	" " 20c.
5 $\frac{1}{2}$ inch .....	" " 21c.

**REFINED IRON.****Extra Sizes, Flat.**1 to 6 inches x  $\frac{1}{4}$  and  $\frac{1}{8}$  inch.....extra per lb., 7 $\frac{1}{2}$ c.**Ovals, Half Ovals and Half Rounds.**

$\frac{1}{4}$ and $\frac{3}{8}$ inch.....	extra per lb., 8 $\frac{1}{2}$ c.
$\frac{1}{2}$ and $\frac{3}{4}$ " .....	" " 10c.
$\frac{1}{2}$ to 1 $\frac{1}{4}$ " .....	" " 12c.

**Horse Shoe Iron.** $\frac{1}{2}$  x  $\frac{1}{4}$  to 1 $\frac{1}{4}$  x  $\frac{1}{4}$  inch.....per lb., ..c.**COMMON IRON.** $\frac{3}{4}$  to 2 inches, round and square.....per lb., ..c. $\frac{1}{2}$  inch, round and square....." ..c.

I also furnish Extra Refined H. B. &amp; S., B. B. H., Bagnall, "Borden's Best," Ulster and Norway irons, and will quote prices on application.

I furnish, at market rates, Tee, Angle, Beam, Channel and Groove iron.

Steel and Iron Rails, Fish Plates, Rail Chairs, Fastenings and Forgings of all kinds.

**TOOL STEEL.**

Best Cast Steel, Round, Square, Octagon, Quarter Octagon, and Flat.....per lb., ..c.

**Base Sizes.** $\frac{5}{8}$  to 2 inches, Round, Square and Octagon.  
 $\frac{5}{8}$  to 2 inches thick x  $\frac{3}{8}$  to 2 inches wide, Flat.

All other sizes extra prices.

**MISCELLANEOUS STEEL.**

Hammer Steel.....	per lb., ..c.
Cast Tire Steel.....	" ..c.
Machinery Cast Steel.....	" ..c.
Sleigh Shoe Steel.....	" ..c.
Cast Spring Steel.....	" ..c.
Too Calk Steel.....	" ..c.
Frog Cast Steel.....	" ..c.
Best Sheet Steel.....	" ..c.
Homogeneous Sheet Steel.....	" ..c.
Bessemer and Open Hearth Steel.....	" ..c.

Prices on application.

**SHEET COPPER.**

Braziers' Copper.....	per lb., ..c.
Circles.....	" ..c.
Locomotive Fire Box Sheets.....	" ..c.
Sheathing Copper, over 12 ozs. per square foot.....	" ..c.
Bolt Copper.....	" ..c.

No copper is sheathing except 14 x 48 inches, and not to exceed 34 ozs. to the square foot.

Prices on application.

**ROLL AND SHEET BRASS.**

Common High Brass, rolled and in sheets.....	per lb., ..c.
Soft Brass Circles.....	" ..c.

Prices on application.

**SHEET LEAD.**Weight per square foot, 2 $\frac{1}{2}$ , 3, 3 $\frac{1}{2}$ , 4, 4 $\frac{1}{2}$ , 5, 6, 8, 9, 10 lbs. and upward.  
Prices on application.**SHEET ZINC.**Nos. 16 to 29 $\frac{1}{2}$ , Stub's Wire Gauge, all sizes.

Prices on application.

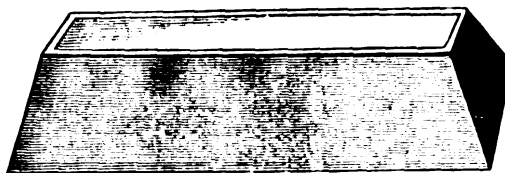
**BABBITT METAL.**

Fig. 2668.

All grades from pure babbitt to the soft metal.

X grade, anti-friction.....	per lb., \$0.20
XX " " .....	" .25
XXX " " .....	" .30

**METALS.**

Pig Iron.....	per ton, \$....
Pig Lead .....	per 100 lbs., ..c.
Block Tin.....	" " ..c.
Antimony.....	" " ..c.
Bismuth .....	" " ..c.

Prices on application.

**TIN PLATE.**

All grades, weights and sizes.

Prices on application.

**METALS.**

Ingot Copper.....	per lb., \$....
Solder .....	" ..c.
Spelter .....	" ..c.
Muntz Metal.....	" ..c.
Phosphor Bronze.....	" ..c.

Prices on application.

**LOCOMOTIVE AND CAR AXLES AND TIRES, STEEL FORGINGS, CASTINGS, Etc.**Steel Tires and Steel Axles  
Prices depending on size and point of delivery.

Steel Forgings.

Steel Castings.

Not less than 100 pounds.

Prices on application.

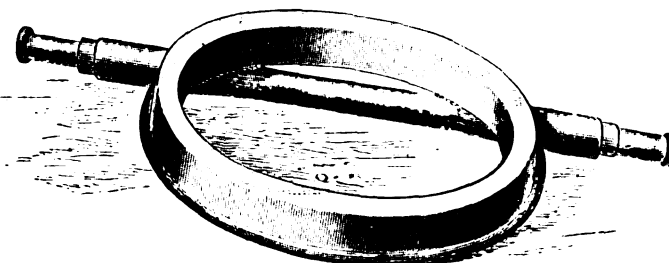


Fig. 2669.

Muck Bar Axles.

Hammered.

Scrap Axles.

Links and Pins.

Brake Shoes.

Prices on application.

**CHILLED IRON MINING AND PLANTATION CAR WHEELS.**

For Mining and Construction Cars.

For Mining and Plantation Cars.

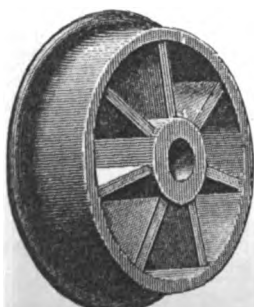


Fig. 2670.

These wheels are made from the very best quality of iron that can be produced for this purpose.

For Mining and Construction Cars made 15, 16 and 17 inches diameter.

For Mining and Plantation Cars made 16 and 18 inches diameter.

Prices on application.

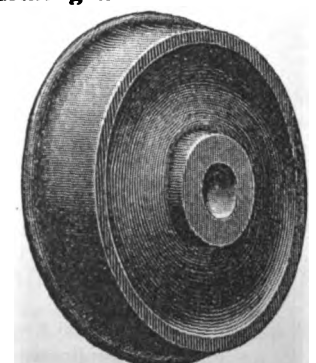


Fig. 2671.



# CAR WHEELS.

## CHILLED IRON CAR WHEEL.

For Passenger and Freight Cars.

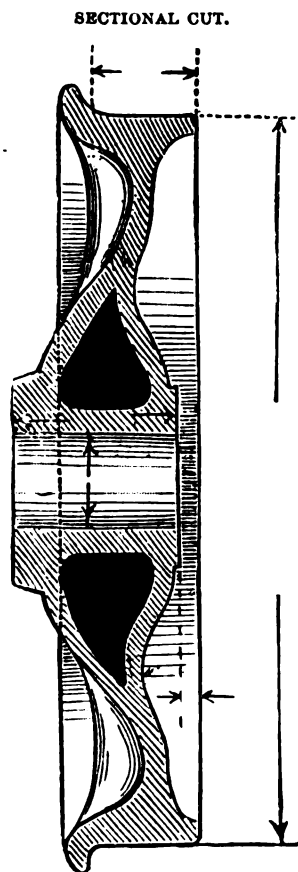


Fig. 2673.

## THE THOMAS PATENT STEEL TIRED WHEEL.

Noiseless, Readily Refitted with New Tire and Absolutely Safe.

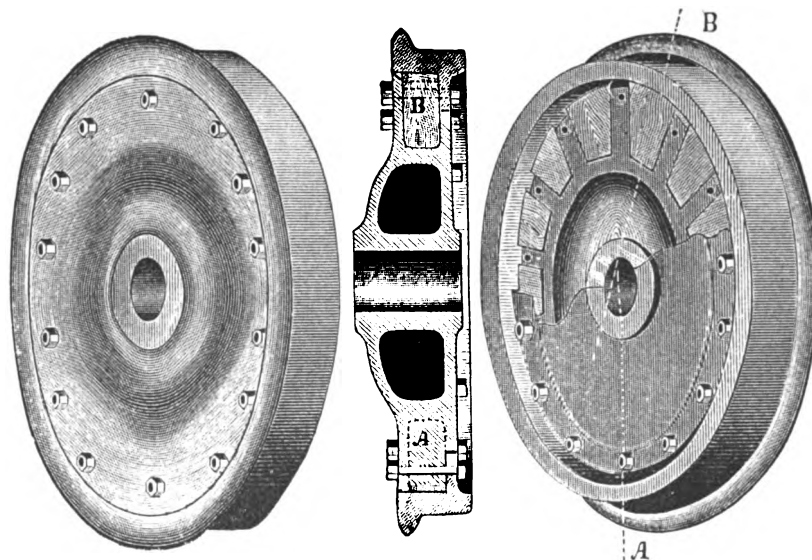


Fig. 2672.

### Description Thomas Patent Steel Tired Wheel.

The center of this wheel is a casting in one piece, having a series of pockets or recesses on its circumference, opening outward, formed by the back and front plates of the casting and the radial metal walls. Into these pockets are forced from the periphery of the casting, wedgeshaped blocks of wood, which, when turned off, extend slightly beyond the radial walls, the tire thus bearing only on wood. The tire is forced on the center under heavy hydraulic pressure, and is secured in case of breakage by tapered bolts fitted to reamed holes, which pass through the internal flange, the radial walls and the retaining ring, and have a bearing in metal their entire length.

Special attention is called to the wheel as one of few parts, and to the facility with which it may be refitted with new tire without renewal of the wooden bearing.

Prices quoted on application.

## CHILLED IRON CAR WHEEL.

For Locomotive Trucks and Tenders.

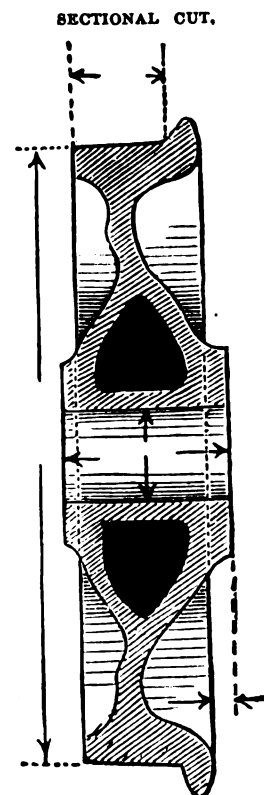


Fig. 2674.

## CHILLED IRON CAR WHEELS.

Figs. 2673 and 2674.

These wheels are made of the very best of iron that can be produced for the purpose, and are all fully tested before being sent out. The wheel, as shown in Fig. 2673, is made 42 inches diameter for passenger cars, 33 inches diameter for passenger and freight cars, 24 and 26 inches diameter for narrow gauge cars. The wheel, as shown in Fig. 2674, is made 30 inches diameter for locomotive trucks and tenders. In ordering wheels give dimensions as indicated in cuts.

Prices quoted on application.

## CHILLED IRON HORSE CAR WHEELS.

Wheel Only.

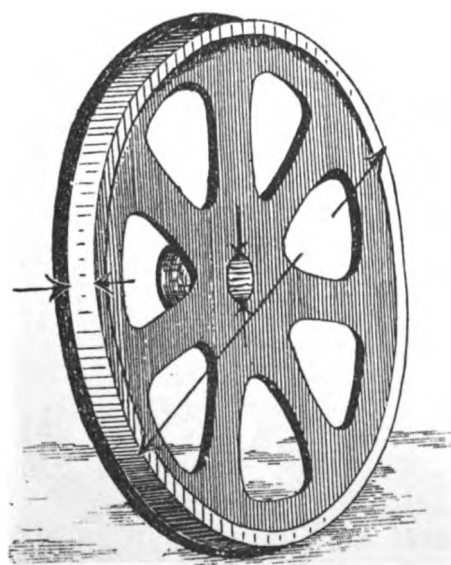


Fig. 2675.

These Open Spoke Chilled Iron Wheels are made especially for horse car service. They are made from the best iron produced for the purpose, and fully tested before leaving the works. The standard size is 30 inches diameter. I will furnish the wheels only, or wheels mounted on iron axles or steel axles, as desired. I will also mount new wheels on old axles.

In ordering wheels give dimensions as indicated in the cuts, also give gauge of track when wanted on axle.

Prices quoted on application.

Wheel on Axle.

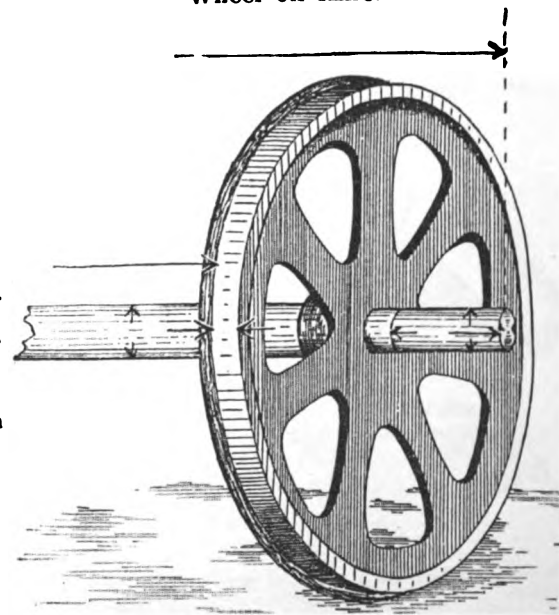
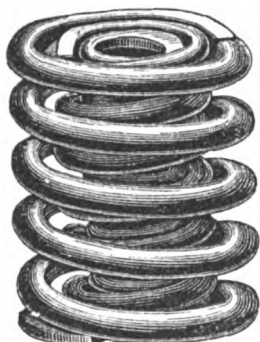
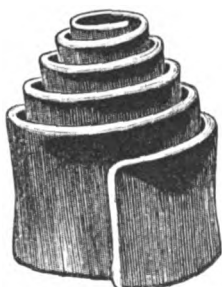
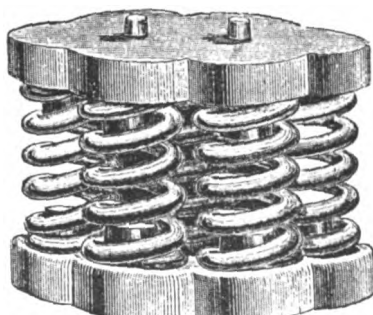


Fig. 2676.

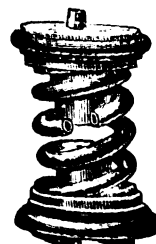
## CAR SPRINGS AND CAR TRIMMINGS.

EQUAL BAR  
BUFFER SPRINGS.Fig. 2677.  
For Buffer and Bearing  
Service for Freight  
and Passenger Cars.VOLUTE BUFFER  
SPRING.

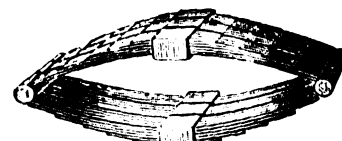
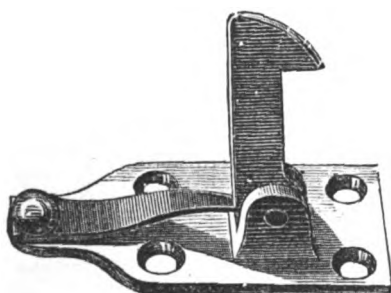
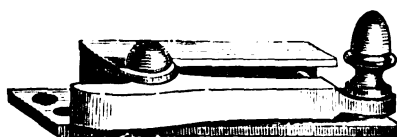
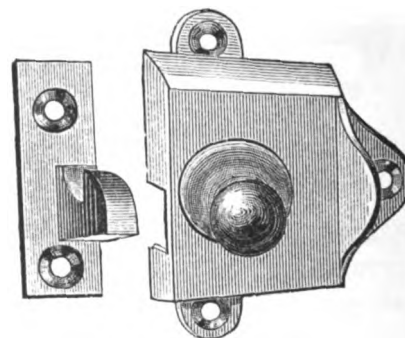
Flat Steel.

Fig. 2678.  
For Buffer Service.GROUP SPIRAL BEARING VOSE GRADUATED  
SPRING.Fig. 2679.  
In Groups of 7 to 10 Spirals.  
Capacity 10 to 25 tons per set of 4

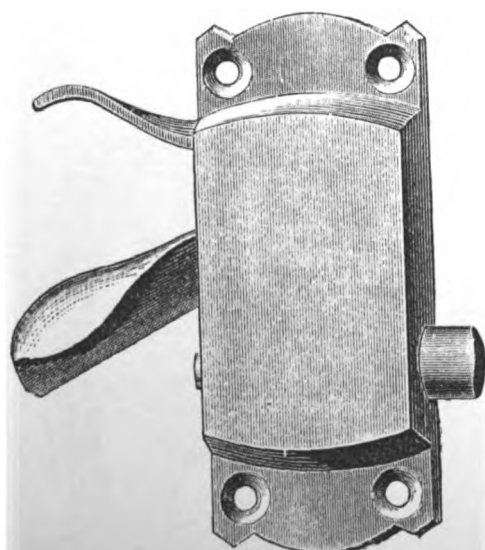
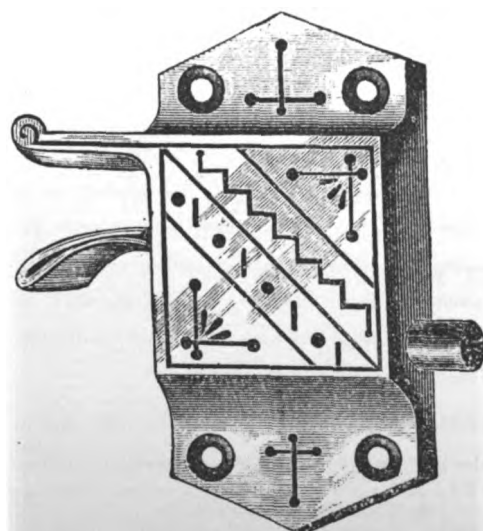
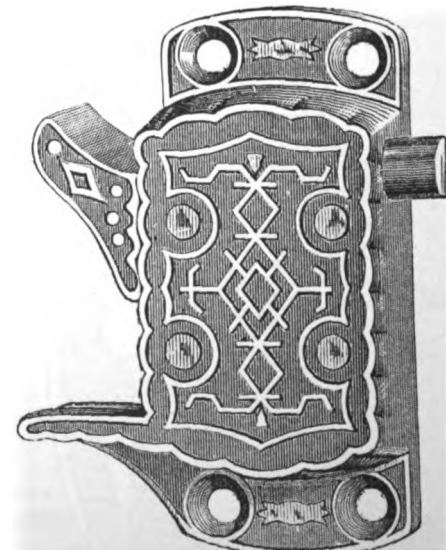
Prices of Springs quoted on application

SPRING.  
Equalizer  
Steel Bar  
and Rubber  
Cones.Fig. 2680.  
For Bolster,  
Pedestal or  
Equalizer.NEST SPIRAL  
SPRING.Fig. 2681.  
For Freight Buffer and Bolster,  
Passenger Equalizer, Miller  
Draw Bar and other service.ENGINE SPRING.  
Best Crucible Spring Steel.Fig. 2682.  
Driving and Forward Truck Springs for  
Engines made to any specification.  
Prices on application.RUBBER SPRINGS.  
For Cars, Etc.Fig. 2683.  
Our Best Car Springs have never failed  
to do good service.  
Prices on application.

ELLIPTIC SPRING.

Fig. 2684.  
Best Crucible Spring Steel for Passenger  
and Freight service.  
Prices on application.LOCOMOTIVE CAB SASH  
FASTENING.Fig. 2685.  
Brass, with Plate, per doz.....\$6.00LOCOMOTIVE CAB WINDOW  
FASTENING.Fig. 2686.  
PLATE FOR ABOVE  
FASTENING.Fig. 2687.  
Brass, with Plate, per doz..... \$10.00CATCH FOR END DOOR  
SASH.Fig. 2688.  
Bronze, per doz ..... \$3.50

## CAR WINDOW SASH LOCKS.

Fig. 2689.  
Bronze or Brass..... per doz., \$3.50  
Plated, ..... " 4.25  
Fancy Pattern, same size as Fig. 2689.  
Bronze or Brass..... per doz., \$3.50  
Plated ..... " 4.25Fig. 2690.  
Bronze..... per doz., \$2.75  
Plated..... " 3.50  
Sash Lock Stops.  
Bronze, for Fig. 2690 ..... per doz., \$0.50  
Bronze, " 2689..... " .40Fig. 2691.  
Bronze or Brass..... per doz., \$3.50  
Plated, ..... " 4.25  
Iron, Tucker Bronzed..... " 2.00  
Iron, Gold Bronzed..... " 2.25  
Bronzed Sash Lock Stops..... " .40

CAR WINDOW, SASH, AND BLIND TRIMMINGS.

WINDOW LIFT.

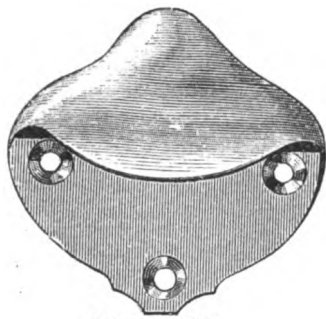


Fig. 2692.

Bronze or Brass.....per doz., \$1.75

FLUSH WINDOW LIFT.

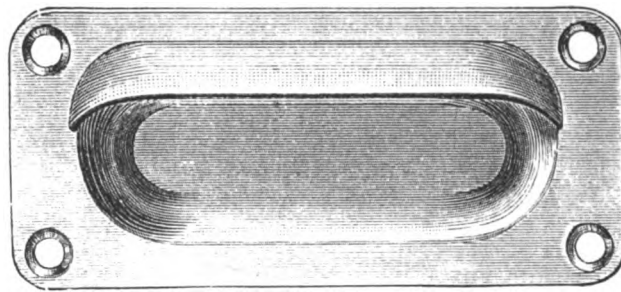


Fig. 2693.

Bronze.....per doz., \$3.00  
Plated....." 4.00

BLIND LIFT.

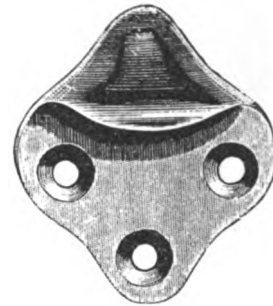


Fig. 2694.

Bronze or Brass.....per doz., \$1.50

SASH OR BLIND LIFT.



Fig. 2695.

No. 72, Bronze.....per doz., \$1.25

SMALLER SIZE,  
Same Pattern as Fig. 2695.

No. 73, Bronze.....per doz., \$1.00

SASH LIFT.

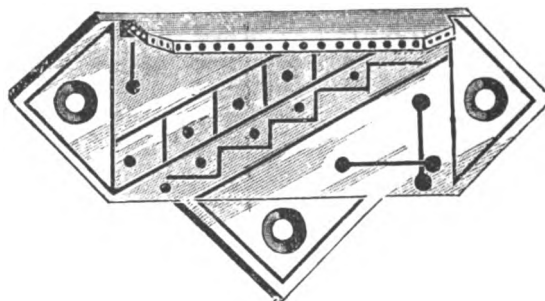


Fig. 2696.

Bronze, per doz., \$2.00 Plated, per doz., \$2.50

SASH LIFT.

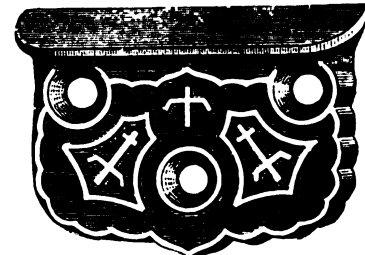


Fig. 2697.

Brass or Bronze.....per doz., \$1.75  
Iron, Tucker Bronzed....." .75

UPPER BLIND LIFT.

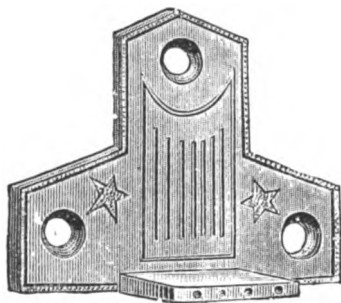


Fig. 2698.

Brass or Bronze.....per doz., \$1.50  
Plated....." 2.25

SASH LIFT.

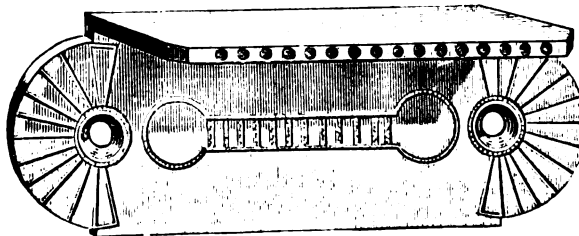


Fig. 2699.

Brass or Bronze.....per doz., \$2.25  
Plated....." 3.00

LOWER BLIND LIFT.

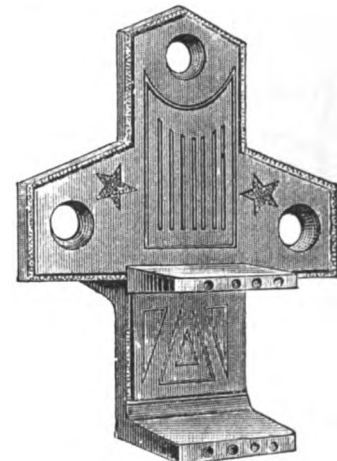


Fig. 2700.

Brass or Bronze.....per doz., \$2.25  
Plated....." 3.00

WINDOW BUTTON.

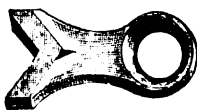


Fig. 2701.

Brass, per doz., \$0.50

BRASS BLIND SPRING.



Fig. 2702.

Per doz.....\$0.50

STEEL BLIND SPRING.



Fig. 2703.

Per Doz.....\$0.60

BLIND BOLT.



Fig. 2707.

Bronze Metal.....per doz., \$3.50  
Bronze Metal, Plated....." 4.50

WINDOW BUTTON.



Fig. 2704.

Brass.....per doz., \$0.50

BLIND BOLT.

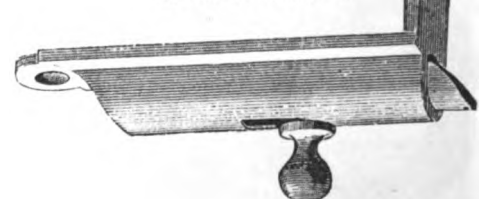


Fig. 2708.

Bronze Metal.....per doz., \$3.50  
Bronze Metal, Plated....." 4.25

BLIND LIFT.

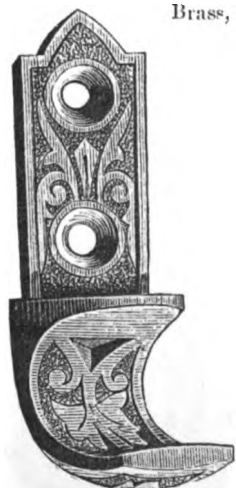


Fig. 2705.

Bronze,  
Per doz.....\$1.50

UPPER BLIND LIFT.



Fig. 2706.

Bronze,  
Per doz.....\$1.25

DECK SASH QUADRANT. CAR DECK SASH TRIMMINGS.  
DECK SASH PULL. DECK SASH PULL.

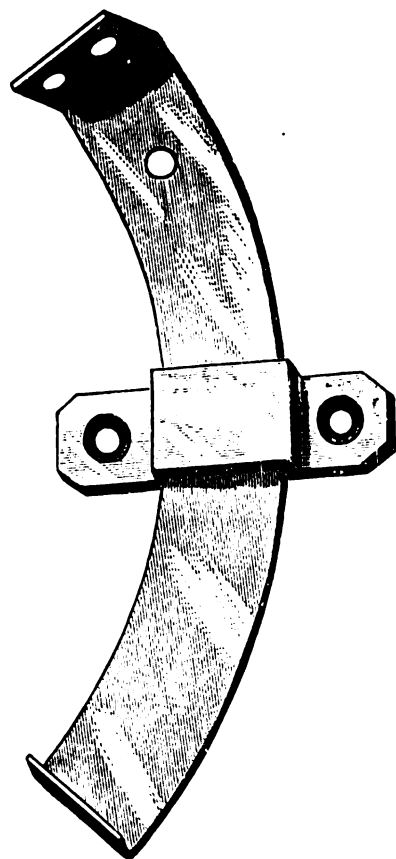


Fig. 2711.

Brass.....per doz. pairs, \$4.00



Fig. 2709.

Bronze.

Per doz.....\$1.25

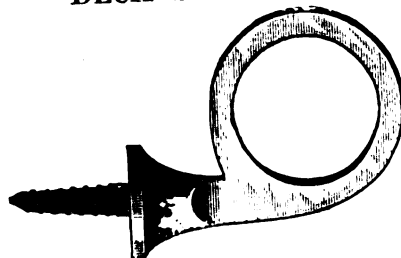


Fig. 2710.

Bronze.....per doz., \$1.25

## DECK SASH CATCH.

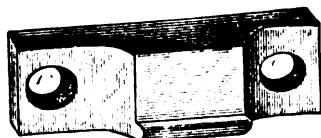


Fig. 2712.

Bronze.....per doz., \$3.50

## DECK SASH PIVOT.

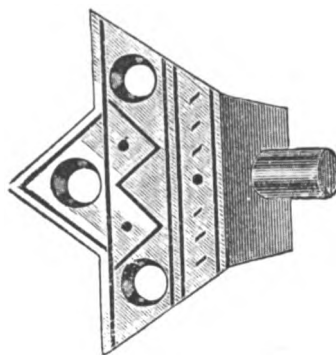


Fig. 2713.

Bronze.....per doz. pairs, \$2.50

## DECK SASH OPENER.

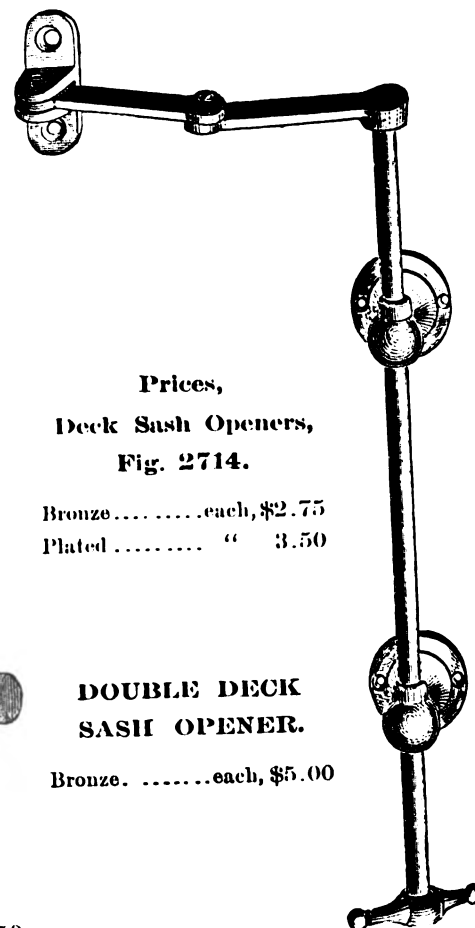


Fig. 2714.

Prices,  
Deck Sash Openers,  
Fig. 2714.

Bronze.....each, \$2.75  
Plated..... " 3.50

DOUBLE DECK  
SASH OPENER.

Bronze.....each, \$5.00

## BELL CORD BUSHING.

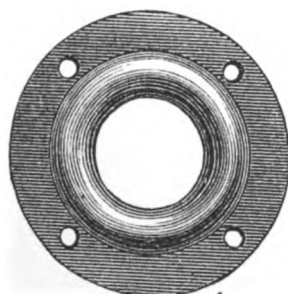


Fig. 2715.

Per Doz.  
Brass or Bronze.....\$2.50  
Iron, Japanned......60  
Iron, Bronzed..... 1.00

BELL CORD  
GUIDE.

Fig. 2716.

Per Doz.  
Brass.....\$2.25  
Plated..... 2.75  
Iron, Jap'd 1.00  
Iron, Bronz'd 1.50

BELL CORD FITTINGS.  
Standard Opening, 1 1/8 inches.

## PULLEY.



Fig. 2717.

Per Doz.  
Brass.....\$3.75  
Bronze..... 3.75  
Plated..... 4.50  
Iron, Japanned 3.00

## PULLEY.



Fig. 2718.

Per Doz.  
Brass.....\$3.75  
Bronze..... 3.75  
Plated..... 4.50  
Iron, Japanned 3.00

SIDE  
PULLEY.

Fig. 2719.

Per Doz.  
Brass.....\$3.75  
Bronze..... 3.75  
Plated..... 4.50  
Iron, Japanned 3.00

## BELL CORD BUSHING.

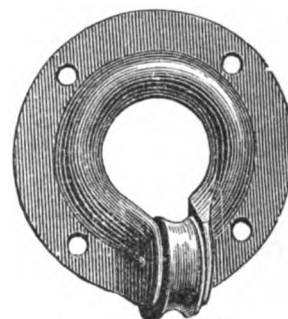


Fig. 2720.

Per Doz.  
Brass or Bronze.....\$3.50  
Iron, Japanned..... 2.00  
Iron, Bronzed..... 2.50

## END HOOK.

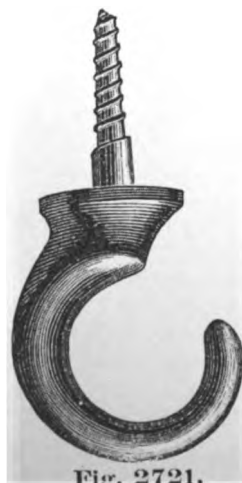


Fig. 2721.

Used to hook up ends  
of bell rope when not in  
use.

## GUIDE.



Fig. 2722.

Per Doz.  
Brass.....\$2.25  
Plated..... 2.75  
Iron, Japanned 1.00  
Iron, Bronzed.. 1.50

## SCREW PULLEY.



Fig. 2723.

Per Doz.  
Brass.....\$3.75  
Bronze..... 3.75  
Plated..... 4.50  
Iron, Japanned 3.00

SCREW SIDE  
PULLEY.

Fig. 2724.

Per Doz.  
Brass.....\$3.75  
Bronze..... 3.75  
Plated..... 4.50  
Iron, Japanned.. 3.00

## SCREW EYE.



Fig. 2725.

Per Doz.  
Bronze.....\$1.00

## END RING.

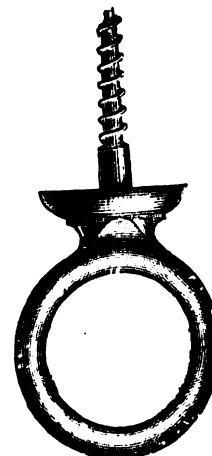


Fig. 2726.

Used to fasten end  
of bell rope.

## Prices, End Hooks, Fig. 2721.

Brass or Bronze.....per doz., \$1.75  
Iron, Japanned..... " 1.00

## Prices, End Rings, Fig. 2726.

Brass or Bronze.....per doz., \$1.75  
Iron, Japanned..... " 1.00



BELL CORD STRAP GUIDES.

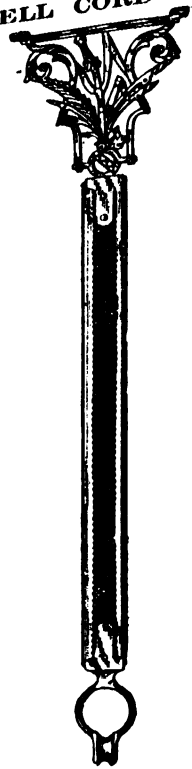


Fig. 2727.



Fig. 2728.

Finish.	Fig. 2727.	Fig. 2728.
Bronze Trimmings..each,	\$1.75	\$1.50
Plated " " "	2.00	1.75

BELL CORD FITTINGS.  
DOUBLE PULLEY FOR SHEET IRON HOODS.



Fig. 2729.

Bronze.....each, \$1.25

BELL CORD COUPLINGS.



Fig. 2730.



Fig. 2731.

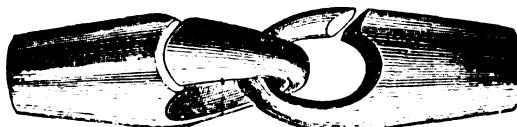


Fig. 2732.

Prices, Bell Cord Couplings.

Japanned, Fig. 2730.....	per doz.,	\$0.35
Japanned, Fig. 2731.....	"	.40
Brass, Fig. 2732.....	"	1.00

BELL CORD STRAP GUIDES.



Fig. 2733.

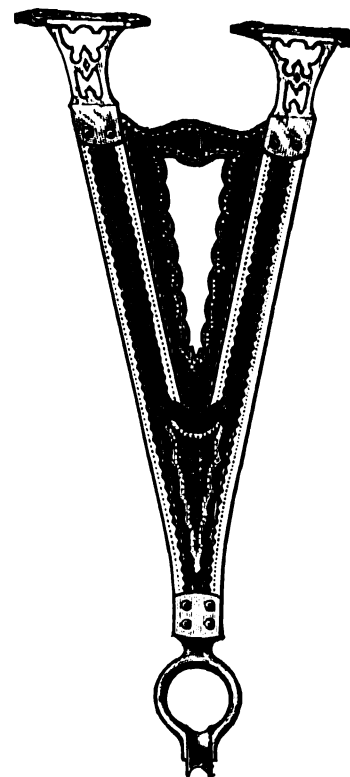


Fig. 2734.

Finish.	Fig. 2733.	Fig. 2734.
Bronze Trimmings.....each,	\$1.50	\$2.50
Plated " " "	1.75	2.87

CAR SEAT FITTINGS.

SEAT ARM PLATE, OLD STYLE.

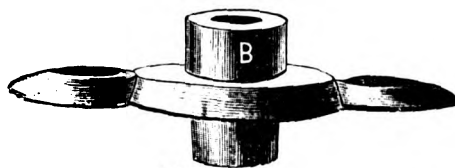


Fig. 2737.

Bronze or Brass.....per doz., \$3.00

SCREW AND WASHER.



Fig. 2738.

PATENT MALLEABLE IRON SEAT ARM.

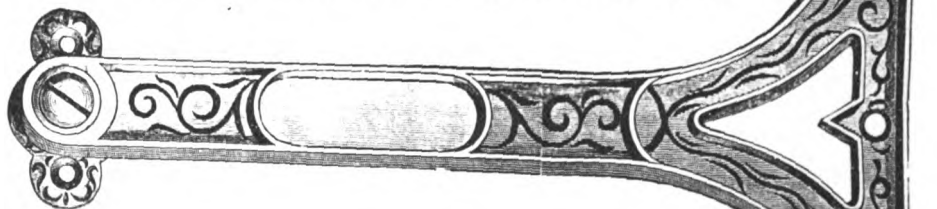


Fig. 2739.

All sizes, drilled and fitted.....	each,	\$0.28
All sizes, gold bronzed and japanned.....	"	.40

SEAT ARM PLATE.

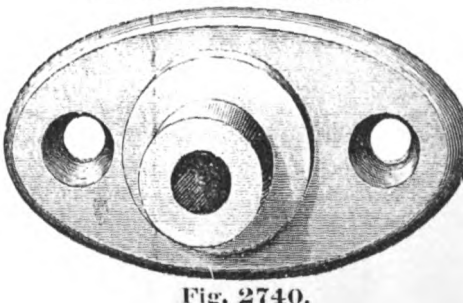


Fig. 2740.

Bronze or Brass, polished....	per dozen,	\$3.00
Bronze or Brass, engraved....	"	2.50

RIVET FOR IRON OR WOOD SEATS AND WASHER.

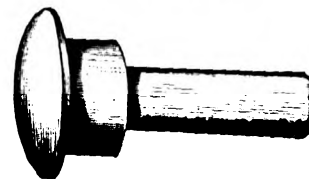


Fig. 2741.

Brass or Bronze.....	per dozen,	\$1.25
Brass or Bronze, for wood seats, including washer.....	per dozen,	1.75

IRON CAR SEAT FRAMES.

Designs and prices furnished on application.

SEAT LOCK.

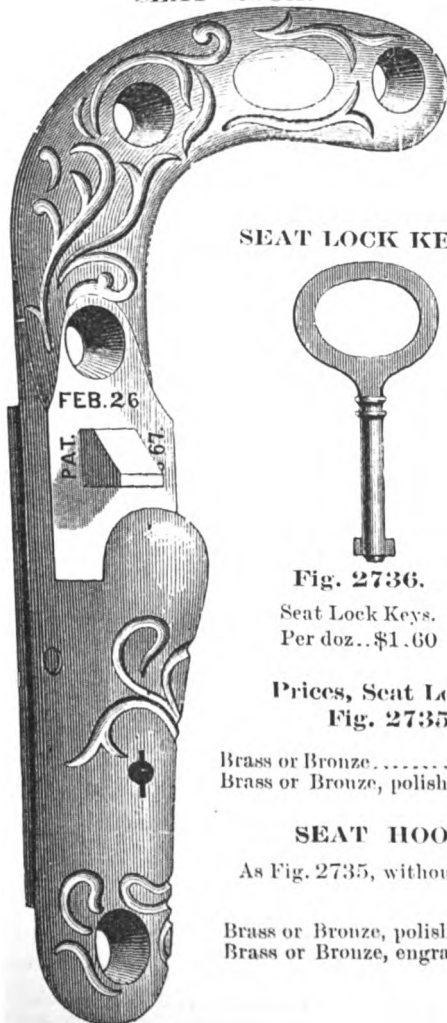


Fig. 2735.

SEAT LOCK KEY.



Fig. 2736.

Seat Lock Keys.  
Per doz..\$1.60

Prices, Seat Locks,  
Fig. 2735.

	Per Doz.
Brass or Bronze.....	\$7.00
Brass or Bronze, polished....	8.00

SEAT HOOKS.

As Fig. 2735, without the lock.

	Per Doz.
Brass or Bronze, polished....	\$3.25
Brass or Bronze, engraved....	2.75



CAR FITTINGS.

BASKET RACK.

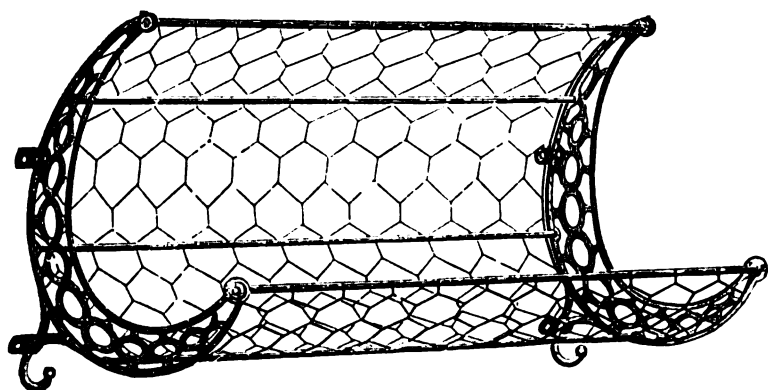


Fig. 2742.

Brass Brackets, iron netting..... each, \$3.00  
Brass Brackets, brass "..... " 3.50

BASKET RACK.

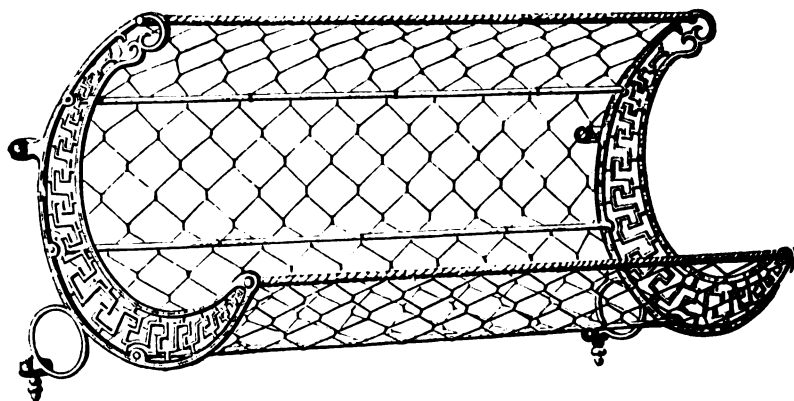


Fig. 2743.

Brass Brackets, tubing on front rods, iron netting..... each, \$3.50  
Brass Brackets, " " " brass "..... " 4.00

BASKET RACK.

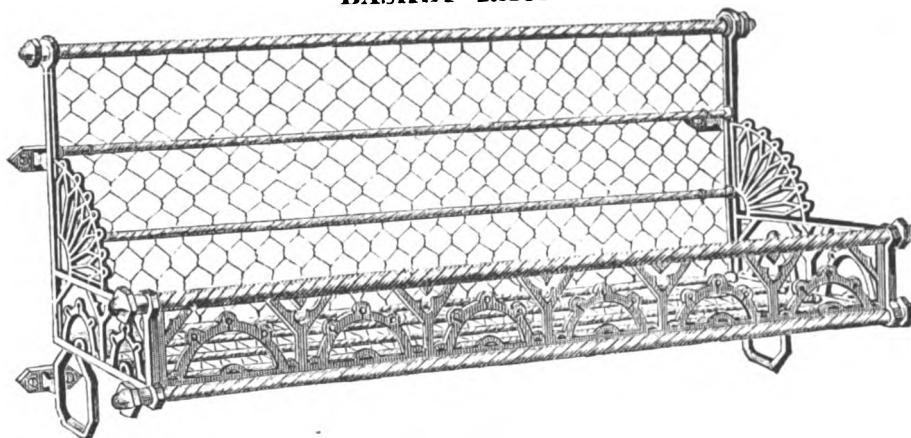


Fig. 2744.

Prices, Fig. 2744.

Netting on bottom only.

Length, 24 inches.

Brass or Bronze.....each, \$5.25  
Plated..... " 6.75

Prices, Fig. 2744.

Tubing on brass rods, and  
netting in place of brass casting  
in front.

Brass or Bronze.....each, \$5.00  
Iron, Japanned..... " 4.25

HAT AND COAT HOOK.

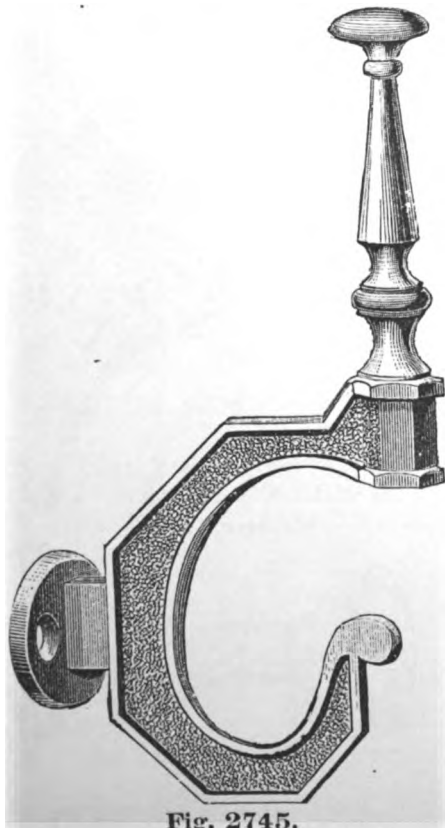


Fig. 2745.

Bronze.....per doz., \$10.00  
Plated..... " 12.00  
No. 2, Style Fig. 2745, but smaller.  
Bronze.....per doz., \$ 8.00  
Plated..... " 10.00

COVERED CURTAIN HOOK.

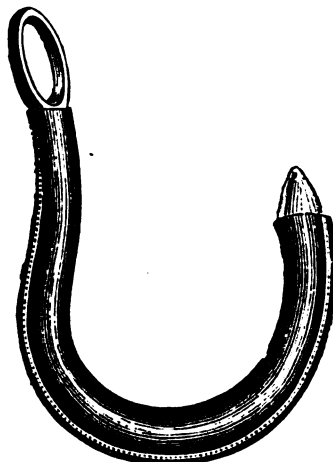


Fig. 2746.

Per gross.....\$36 00

POUCH HOOK.

For Mail Car.

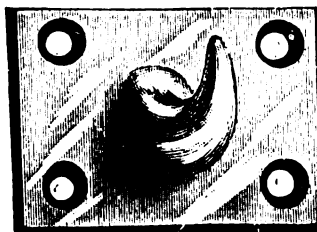


Fig. 2747.

Brass or Bronze.....per doz., \$3 00

HAT AND COAT HOOK.

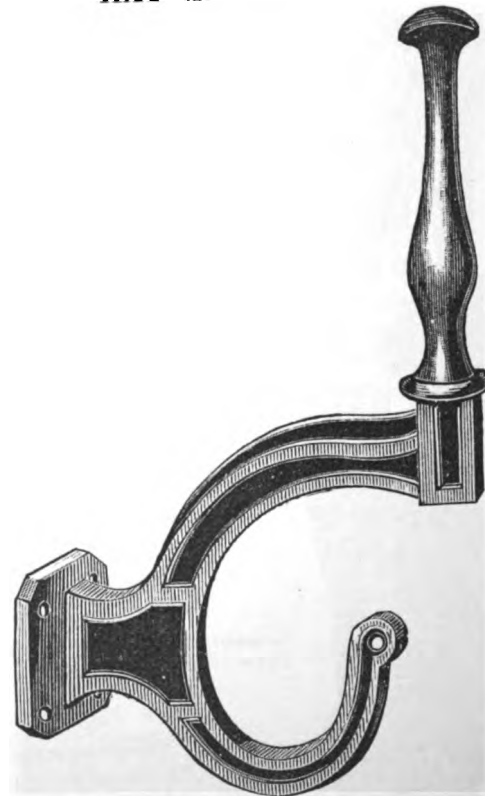


Fig. 2748.

Large size for sleeping cars, etc. Extra finish.

Bronze.....per doz., \$13 50  
Plated..... " 15.00

### SALOON PUMP.

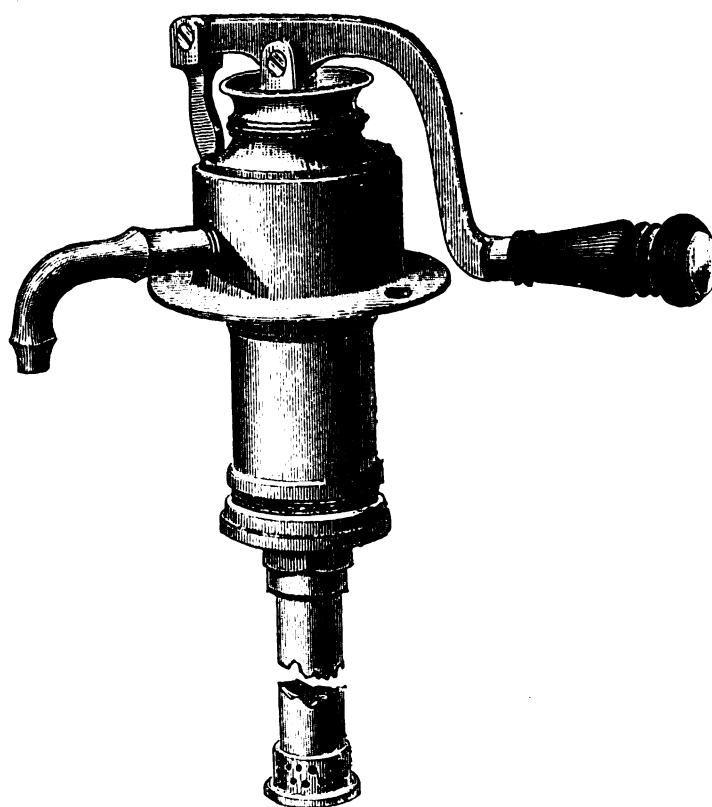
**Fig. 2749.**

Silver or Nickel Plated.....each, \$2.50

**Price, Saloon Pump, Fig. 2750.**

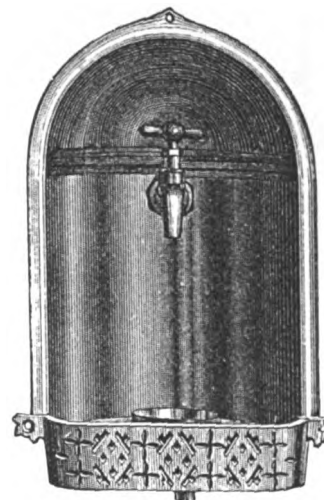
**Either right or left hand as required.**

**Silver or Nickel Plated.....each, \$14.00**



**Fig. 2750.**

**ALCOVE.**  
**For Ice Water.**

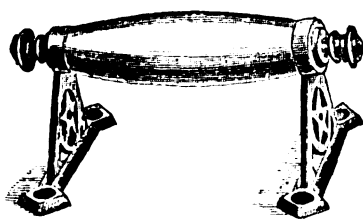


**Fig. 2751.**

**Nickel Plated.**

	Each.
No. 1, 81 $\frac{1}{4}$ inches wide, 13 inches high and 47 $\frac{1}{2}$ inches deep.....	\$12.00
No. 2, 75 $\frac{1}{8}$ inches wide, 12 inches high and 41 $\frac{1}{2}$ inches deep.....	10.00
No. 3, 163 $\frac{1}{4}$ inches wide, 201 $\frac{1}{2}$ inches high and 103 $\frac{1}{4}$ inches deep.....	25.00

**URINAL HANDLE.**  
**Porcelain Handle.**



**Fig. 2752.**

Bronze.....	each, \$1.00
Plated .....	" 1.25

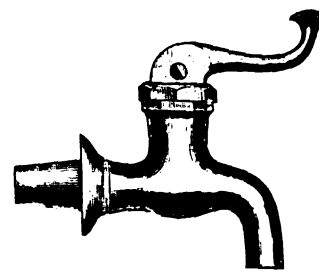
**WASH BASIN, NO OVERFLOW.**



**Fig. 2753.**

13 inches outside diameter.....	each, \$1.60
14    "         "         "         .....	"         2.00

**TELEGRAPH COOLER COCK.**



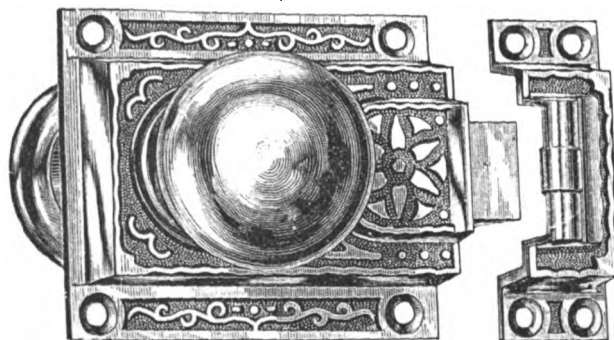
**Fig. 2754.**

Brass, with couplings.....	each, \$1.50
Plated, " " .....	" 2.00

**IRON AND PORCELAIN URINALS AND CLOSET HOPPERS.**

See page 45 for description and prices.

### SALOON DOOR LATCH.

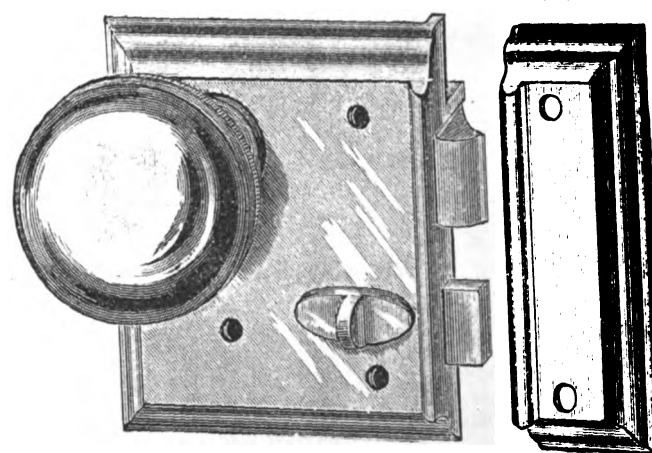


**Fig. 2757a**

Size, including nosing, 3x17<sub>8</sub> inches.

Bronze or Brass, with knob.....	each, \$3	75
Plated, with knob.....	"	4.25
Iron, Japanned, with knob.....	"	2.50
Iron, Tucker Bronzed, with knob.....	"	2.50
Iron, Nickel Plated, with knob.....	"	2.75

### SALOON DOOR LATCH AND BOLT.



**Fig. 2756.**

Size, including nosing,  $33\frac{3}{4} \times 45\frac{3}{8}$  inches.

Bronze, with knob.....	each, \$5.00
Plated, " " .....	" 6.00

## CAR DOOR LOCKS.

DOOR LOCK, No. 12.

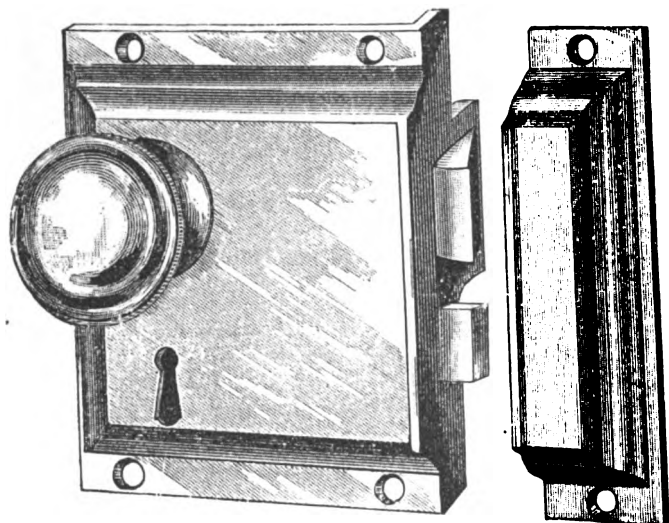


Fig. 2757.

Size, including nosing,  $4\frac{7}{8} \times 5$  inches.

With adjustable knobs.

Bronze, complete.....	each, \$5.50
Plated, ".....	" 6.50

## KEY

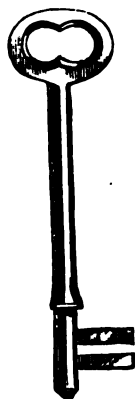
For No. 12  
Car Door Lock.

Fig. 2758.

DOOR LOCK, No. 2.

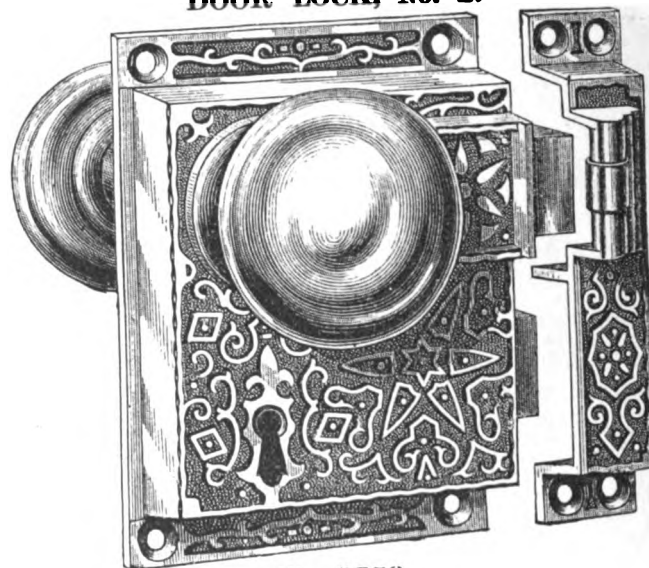


Fig. 2759.

Size, including nosing,  $4\frac{7}{8} \times 4\frac{7}{8}$  inches.

With brass knobs.

Brass or Bronze.....	complete, each, \$5.00
Silver or Nickel Plated.....	" " 6.00
Iron, Japanned or Tucker Bronzed.....	" " 3.50
Iron, Gold or Copper Bronzed.....	" " 4.00
Iron, Nickel Plated.....	" " 4.50

DOOR LOCK, No. 5.

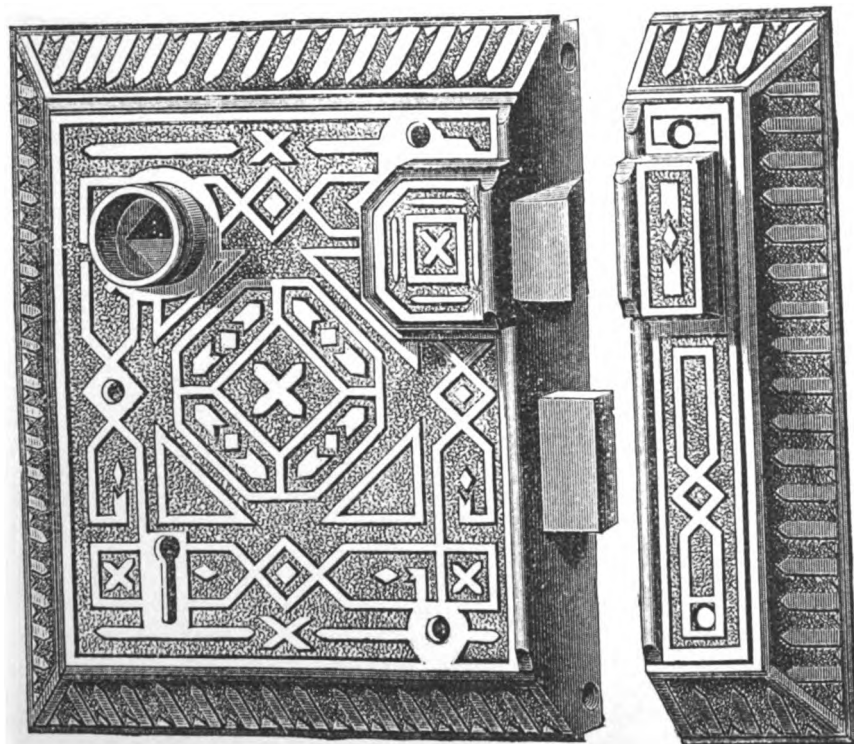


Fig. 2760.

Size, including nosing,  $5\frac{1}{8} \times 5\frac{1}{2}$  inches.

Brass or Bronze, complete with knobs, Escutcheon and Steel Key.....	each, \$6.00
Silver or Nickel Plated, complete with knobs, Escutcheon and Steel Key.....	" 6.50

CAR DOOR LOCKS, No. 4.

Same style and size as No. 5, Fig. 2760, but perfectly plain, polished.

Prices, Complete with Knob, Escutcheon and Steel Key.

Brass or Bronze.....	each, \$6.25
Silver or Nickel Plated.....	" 6.75
Iron, Japanned or Tucker Bronzed.....	" 4.50

Prices, Knobs only.

$2\frac{1}{2}$ inch, Plain Brass.....	per doz. pairs, \$18.00
$2\frac{1}{2}$ " Brass, Plated.....	" " 24.00
$2\frac{1}{2}$ " Bronze, Figured.....	" " 21.00
$2\frac{1}{4}$ " Plain Brass, for Saloon Latch.....	" " 16.00
$2\frac{1}{4}$ " Brass, Plated, " ".....	" " 21.00

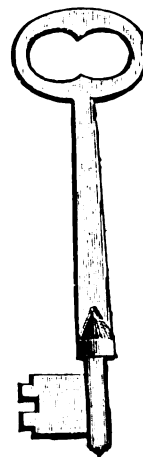
FLAT STEEL  
KEY.For Nos. 4 and 5  
Car Door Locks.

Fig. 2761.

## ESCUTCHEON.

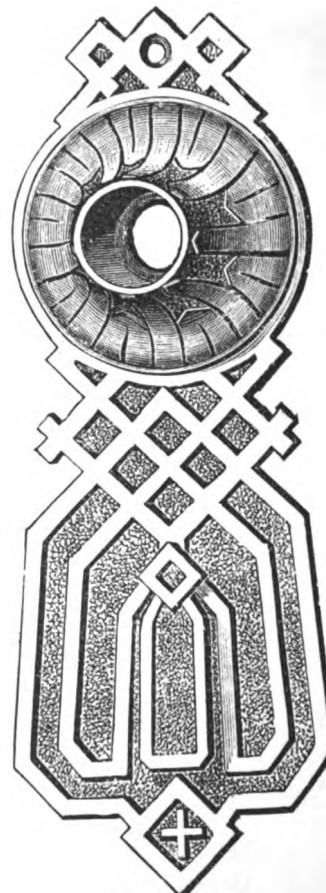


Fig. 2762.

## BRONZE METAL KNOBS.

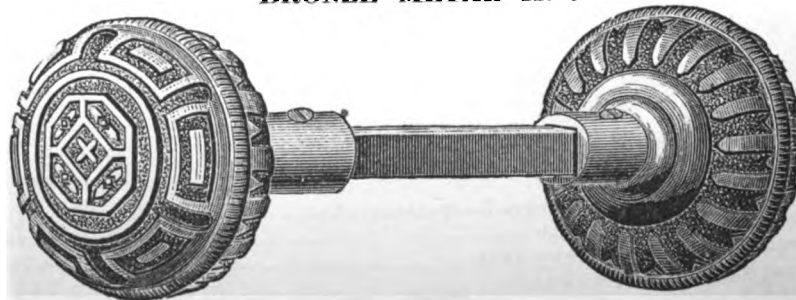


Fig. 2763.

BRASS AND BRONZE BUTTS AND DOOR HOLDERS.

BRONZE CAR DOOR BUTT.

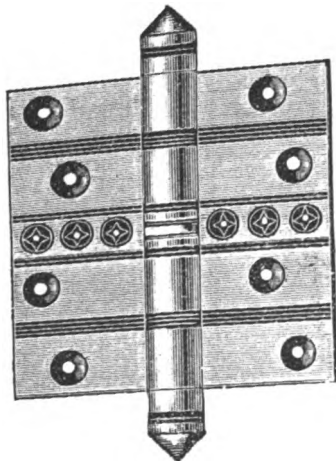


Fig. 2764.

CAST BRASS LOOSE JOINT CAR BUTT.  
3 1/4 x 3 inches.

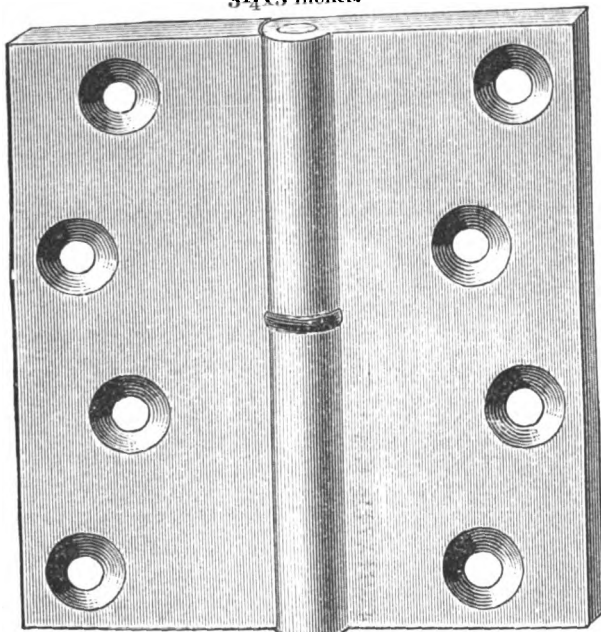


Fig. 2768.

Sizes, inches ... 2 1/2 x 2 3/4  
Per doz. pairs...\$11.50 15.50

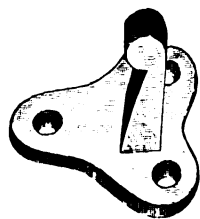


Fig. 2765.

Bronze.....per doz., \$12.00 Plated.....per doz., \$13.50

Prices, Car Door Butts, Fig. 2764.

3 1/2 x 2 3/8 inches, Bronze.....	per doz. pairs, \$18.00
3 1/2 x 3 " " " " " "	" " 21.00
3 1/2 x 3 1/2 " " " " " "	" " 27.00

Prices, Car Door Butts, Fig. 2767.

3 1/4 x 2 1/2 inches, Bronze.....	per doz. pairs, \$18.00
3 1/4 x 3 " " " " " "	" " 21.00
3 7/8 x 3 " " " " " "	" " 27.00

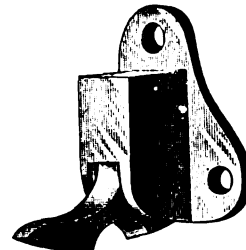


Fig. 2766.

CAST BRASS, BROAD,  
FAST JOINT BUTT.

3 1/2 x 3 1/2 inches.

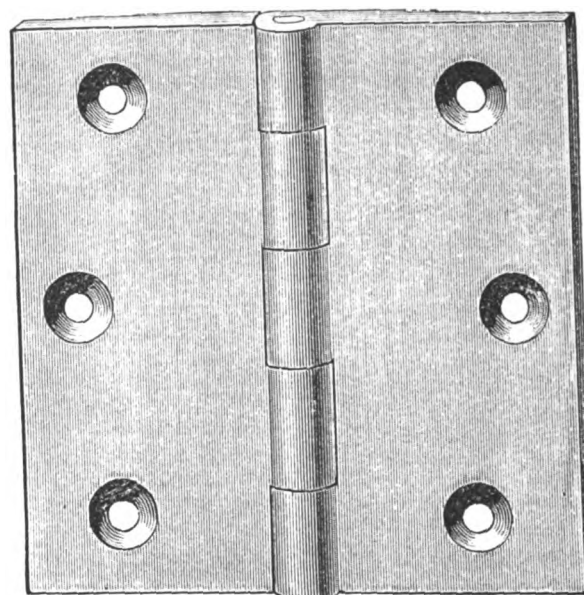


Fig. 2769.

Prices, Cast Brass Loose Joint Car Butts, Fig. 2768.

Extra heavy with steel pins and washers, fine finished and lacquered.

Prices, Cast Brass Broad Fast Joint Butts, Fig. 2769.

Sizes, inches....	3x3	3x3 1/4	3x3 1/2	3x3 3/4	3x4	3x4 1/4	3x4 1/2	3x4 3/4	3x5	3 1/4 x 3 1/4	3 1/4 x 3 1/2	3 1/4 x 4	3 1/2 x 3	3 1/2 x 3 1/4	3 1/2 x 3 1/2	3 1/2 x 4	3 1/2 x 4 1/2
Per doz. pairs...	\$9.60	10.00	12.00	12.75	13.50	15.00	17.00	18.00	18.25	12.00	13.00	14.25	12.00	13.00	14.25	16.00	18.00

Sizes, inches....	3 1/2 x 5	3 1/2 x 5 1/2	3 1/2 x 6	3 1/2 x 7	4x4	4x4 1/2	4x5	4x6	4 1/2 x 4	4 1/2 x 4 1/2	4 1/2 x 5	4 3/4 x 3 3/4	4 3/4 x 5 1/4	5x4	5x4 1/2	5x5	7x6
Per doz. pairs...	\$23.00	26.00	32.00	36.00	19.50	24.00	27.00	36.00	21.50	26.50	32.00	26.00	38.50	28.00	31.00	39.00	65.00

Prices, Cast Brass Loose Joint Butts.

Sizes, inches....	2x2	2x2 1/2	2x4	2 1/2 x 1 5/8	2 1/2 x 2	2 1/2 x 2 1/4	2 1/2 x 2 1/2	2 1/2 x 3	2 1/2 x 3 1/4	2 1/2 x 3 1/2	3x2	3x2 1/2	3x3	3x3 1/2	3x4	3x5 1/4	3 1/4 x 2 1/2
Per doz. pairs...	\$4.55	5.35	8.50	4.10	5.60	6.60	6.70	9.10	9.50	9.70	7.40	9.10	10.80	13.50	15.75	22.00	9.00

Sizes, inches....	3 1/4 x 3	3 1/2 x 2 3/8	3 1/2 x 2 1/2	3 1/2 x 3	3 1/2 x 3 1/4	3 1/2 x 3 1/2	4x2 3/4	4x3 1/2	4x4	4x4 1/2	4x5	4x5 1/2	4 1/2 x 3	4 1/2 x 3 1/4	5x3 1/4	5x5	6x6
Per doz. pairs...	\$11.80	10.60	11.00	13.75	16.25	15.75	14.00	19.00	22.35	25.60	30.40	32.25	19.00	25.80	23.50	42.00	60.00

Prices, Cast Brass Narrow Fast Joint Butts, Fig. 2770.

Sizes, inches....	*1x7/8	*1 1/4 x 1	1 1/4 x 1 1/4	1 1/2 x 1	*1 1/2 x 1 1/4	1 1/2 x 1 1/2	*1 3/4 x 1 1/4	1 3/4 x 1 1/2	1 3/4 x 1 5/8	1 3/4 x 1 3/4	2x1	*2x1 1/4	2x1 1/2	2x1 5/8	2x1 3/4
Per doz. pairs...	\$1.20	1.55	1.90	1.95	2.00	2.35	2.45	2.80	2.90	3.35	2.40	2.50	2.90	3.25	3.60

Sizes, inches....	2x2	2 1/4 x 1	2 1/4 x 1 1/4	*2 1/4 x 1 3/8	2 1/4 x 1 1/2	2 1/4 x 1 3/4	2 1/4 x 2	2 1/4 x 2 1/4	2 1/2 x 1	2 1/2 x 1 1/4	2 1/2 x 1 1/2	*2 1/2 x 1 5/8	2 1/2 x 1 3/4	2 1/2 x 1 7/8	2 1/2 x 2
Per doz. pairs...	\$3.90	2.90	2.90	3.00	3.25	3.70	4.10	4.50	3.10	3.15	3.25	3.70	4.20	4.50	5.00

Sizes, inches....	2 1/2 x 2 1/4	2 1/2 x 2 1/2	*2 3/4 x 1 3/4	2 3/4 x 2	2 3/4 x 2 1/4	3x1 1/4	3x1 1/2	3x1 3/4	*3x2	3x2 1/4	3x2 1/2	3x2 3/4	3 1/4 x 1 3/4	3 1/4 x 2	*3 1/4 x 2 1/4
Per doz. pairs...	\$5.50	6.10	4.80	5.50	5.60	4.50	4.55	4.90	5.90	7.00	7.30	7.75	5.25	6.75	7.30

Sizes, inches....	3 1/4 x 2 1/2	3 1/4 x 2 3/4	3 1/4 x 3	3 1/2 x 1 3/4	3 1/2 x 2	3 1/2 x 2 1/4	*3 1/2 x 2 3/8	3 1/2 x 2 1/2	3 1/2 x 2 5/8	3 1/2 x 2 3/4	4x2	4x2 1/4	4x2 3/8	4x2 1/2	*4x2 3/4
Per doz. pairs...	\$7.80	8.25	9.00	6.25	7.70	8.25	8.50	9.70	10.25	10.60	8.00	10.25	11.00	11.50	12.00

Sizes, inches....	4x3	4x3 1/4	4x3 1/2	4 1/4 x 2 1/2	4 1/4 x 3	4 1/4 x 3 1/2	4 3/8 x 2 1/2	4 1/2 x 2	4 1/2 x 2 1/4	4 1/2 x 2 1/2	4 1/2 x 2 3/4	*4 1/2 x 3	4 1/2 x 3 1/2	*5x3 1/4	6x4
Per doz. pairs...	\$13.25	14.25	14.75	12.50	13.25	15.00	13.00	11.00	11.50	12.60	13.50	16.50	19.00	20.00	52.00

\* Regular sizes of Narrow Butts.

With Slip Pins for 3 in. and smaller add \$1.25 per doz. pairs net.

With Slip Pins for 3 1/4 in. and larger add \$1.50 per doz. pairs net.

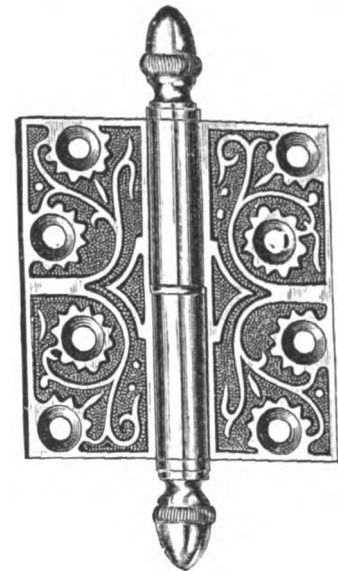


Fig. 2767.

CAST BRASS  
NARROW  
FAST JOINT  
BUTT.

2 1/2 x 1 5/8 inches.

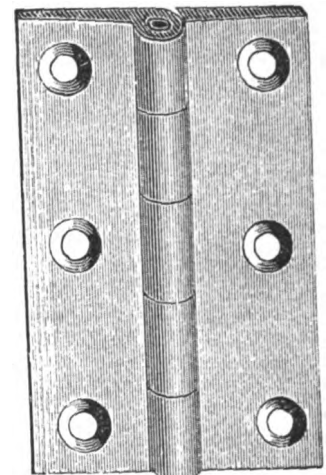


Fig. 2770.



## WROUGHT IRON BUTTS AND HINGES.

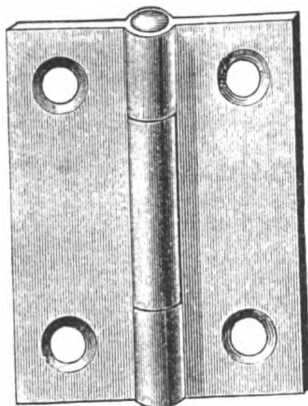
NARROW FAST JOINT  
WROUGHT IRON BUTT.

Fig. 2771.

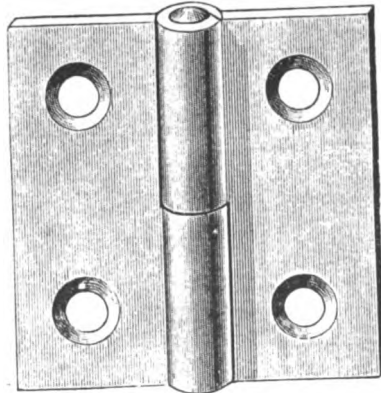
BROAD LOOSE JOINT  
WROUGHT IRON BUTT.

Fig. 2772.

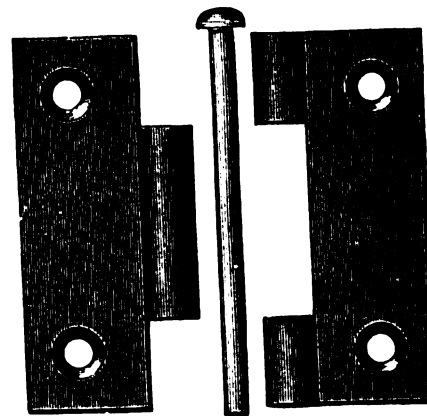
LOOSE PIN  
WROUGHT IRON BUTT.

Fig. 2773.

## Prices, Wrought Iron Narrow Fast Joint Butts, Fig. 2771.

Sizes, inches	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/2	5	5 1/2	6
Per dozen pairs	\$0.32	.36	.43	.50	.60	.66	.72	.84	.90	1.08	1.44	1.68	1.92	2 70	3.30	4.30	5.50

## Prices, Wrought Iron Broad Fast Joint Butts.

Sizes, inches	2x2	2x2 1/2	2 1/2 x 2 1/2	2 1/2 x 3	3x2 1/2	3x3	3 1/2 x 3	3 1/2 x 3 1/2	4x4	4 1/2 x 4 1/2
Per dozen pairs	\$0.78	.93	1.08	1.20	1.35	1.44	1.90	2.16	3.12	4.20

## Prices, Wrought Iron Loose Joint Butts, Fig. 2772.

Sizes, inches	2x2	2x2 1/2	2 1/2 x 2	2 1/2 x 2 1/2	3x2 1/2	3x3	3x3 1/2	3 1/2 x 3	3 1/2 x 3 1/2	4x4	4 1/2 x 4 1/2	5x5
Per dozen pairs	\$1.10	1.20	1.20	1.32	1.68	1.86	2.10	2.40	2.70	3.30	4.25	5.50

## Prices, Wrought Iron Loose Pin Butts, Fig. 2773.

Sizes, inches	2x2	2x2 1/2	2x3	2 1/2 x 2	2 1/2 x 2 1/2	2 1/2 x 3	3x2 1/2	3x3	3x3 1/2	3 1/2 x 3	3 1/2 x 3 1/2	4x4	4 1/2 x 4 1/2	5x5	6x6
Per dozen pairs	\$1.10	1 20	1.30	1.20	1.32	1.56	1.68	1.86	2.10	2.40	2.70	3.30	4.25	5.50	7.00

WROUGHT IRON STRAP HINGE.

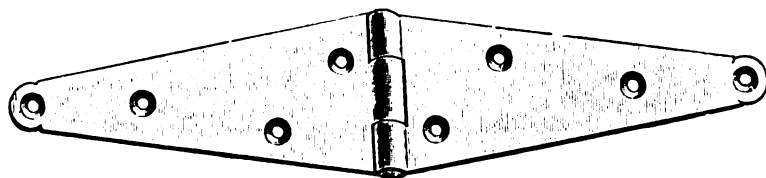


Fig. 2774.

WROUGHT IRON T HINGE.

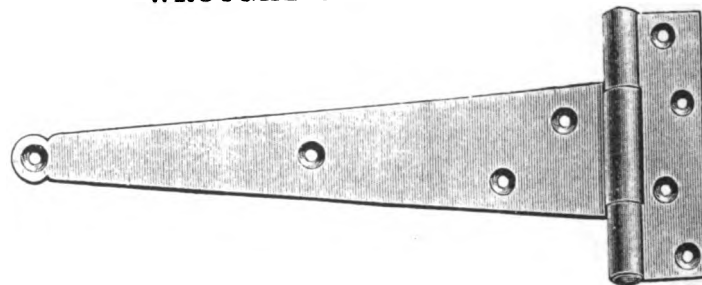


Fig. 2775.

## Prices, Light Strap Hinges.

Length, inches	3	4	5	6	8	10	12	14	16
Per doz. pairs	\$1.00	1.20	1.40	1.70	2.50	3.50	6.00	7.50	9.00

## Prices, Heavy Strap Hinges.

Length, ins.	4	5	6	8	10	12	14	16
Per doz. pairs	\$1.40	1.85	Per pound	\$0.14	.13 1/2	.13	.12 1/2	.12

## Prices, Hinge Hasps or Pad Lock Hinges.

Length, inches	3	4 1/2	6	8	10
Per doz. pairs	\$1.75	2.00	2.25	3.50	4.75

## Prices, Light T Hinges.

Length, inches	3	4	5	6	8	10	12	14
Per doz. pairs	\$1.00	1.10	1.30	1.50	1.80	2.40	3.75	5.50

## Prices, Heavy T Hinges.

Length, inches	4	5	6	8	10	12	14	16	18
Per doz. pairs	\$1.50	1.60	1.70	2.25	3.25	5.00	7.00	8.00	9.00

## Prices, Extra Heavy T Hinges.

Length, inches...	5	Length, ins.	6	8	10	12	14	16
Per doz. pairs....	\$2.50	Per pound..	\$0.14½	.14	.13½	.13	.12½	.12½

## Approximate Weights per Dozen of Heavy Strap and Extra Heavy T Hinges.

Length, inches	6	8	10	12	14	16
Heavy Strap. Lbs. per doz.	19 1/2	32 1/4	55 1/4	74 1/2	89 1/2	108 1/2
Length, inches	6	8	10	12	14	16
Extra Heavy T. Lbs. per doz.	20 3/4	34 3/4	54	78	83	87

## GALVANIZED WROUGHT IRON STRAP AND T HINGES.

With Brass Rivets.

Light Strap, Heavy Strap, Light T, Heavy T, Extra Heavy T Hinges same sizes as above.  
Special prices on application.

HOOK AND EYE HINGE.



Fig. 2776.

Diameter, inches	1/2	5/8	3/4
Per dozen pairs	\$3.50	6.00	8.45

HEAVY SCREW HOOK HINGE.

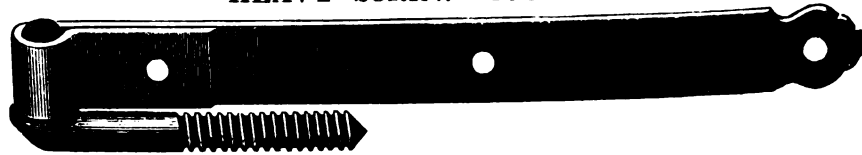


Fig. 2777.

Length, inches, 8, 10 and 12	per 100 pounds, \$....
" " 14, 16, 18, 20, 22, 24, 26, 28, 30 and 36	" " " " " " " " " " " "



KEYSTONE JAIL PAD LOCKS.

THORNTON N. MOTLEY, SOLE AGENT.

MALLEABLE IRON WITH MALLEABLE OR WROUGHT IRON PATENT INTER-LOCKING TUMBLERS.

No. 11. Style Nos. 9 to 14.

No. 110.  
Style Nos. 109 to 114.

No. 210.  
Style Nos. 210 to 212.

No. 226. Style Nos. 225 to 228.

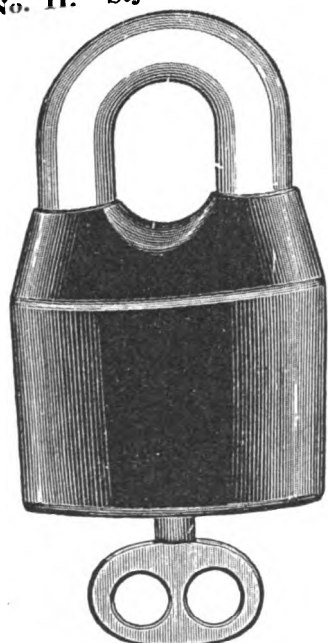


Fig. 2778.

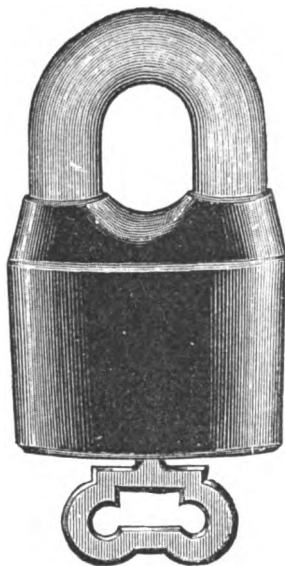


Fig. 2779.

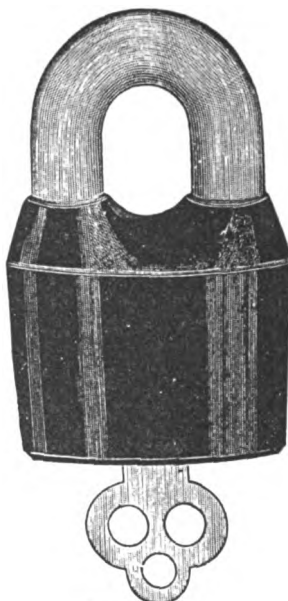


Fig. 2780.



Fig. 2781.

Loose Shackle.

Red Finish. Malleable Iron Tumblers. 2 Keys with each Lock.						
Nos.	9	10	11	12	13	14
Tumblers	4	6	6	6	8	8
Per doz.	\$2.50	3.00	3.75	4.50	5.50	8.00

Secured Shackle.

Black Japanned. Highly Finished. Malleable Iron Tumblers. 2 Flat Steel Keys with each Lock. Keys all different.			
Nos.	210	211	212
Tumblers	6	6	8
Per doz.	\$4.50	5.50	6.75

Extra Jail Pad Locks.

Black Japanned Shackles and Keys. Highly Polished. All Malleable Iron. 2 Flat Steel Keys with each Lock. Keys all different.			
Nos.	510	511	512
Per doz.	\$5.40	6.30	7.70

Secured Shackle.

Red Finish. Malleable Iron Tumblers. 2 Keys with each Lock.						
Nos.	109	110	111	112	113	114
Tumblers	4	6	6	6	8	8
Per doz.	\$2.75	3.50	4.30	5.00	6.00	9.00

Secured Shackle.

Bright Brown Japanned. Wrought Iron Tumblers. 2 Flat Steel Keys with each Lock. Keys all different.			
Nos.	225	226	227
Tumblers	6	6	8
Per doz.	\$7.50	10.00	13.00

Bronze Jail Pad Locks.

Polished. 2 Flat Steel Keys with each Lock. Keys all different.				
Nos.	450	460	470	480
Per doz.	\$7.75	10.25	15.00	19.00

KEYSTONE JAIL PAD LOCKS WITH TINNED IRON CHAINS.

No. 220.  
Style Nos. 230 and 240.

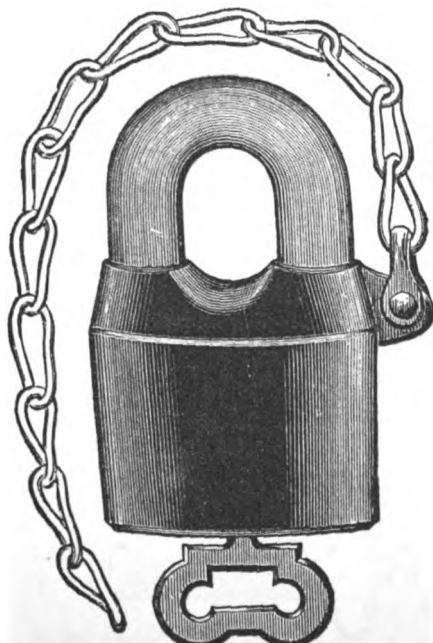


Fig. 2782.

Secured Shackle.

Red Finished. Malleable Iron Tumblers with Tinned Iron Chains. 2 Keys with each Lock.			
Nos.	220	230	240
Tumblers	6	6	8
Per doz.	\$5.75	6.75	7.50

Secured Shackle.

Black Japanned. Highly Finished. Malleable Iron Tumblers. 2 Flat Steel Keys with each Lock. Keys all different. Style of Fig. 2780, with Chain as shown in Fig. 2782.			
Nos.	320	330	340
Tumblers	6	6	8
Per doz.	\$6.75	7.75	9.00

Secured Shackle.

Bright Brown Japanned. Wrought Iron Tumblers. 2 Flat Steel Keys with each Lock. Keys all different. Extra Quality for R.R. and Switch use.			
Nos.	225 $\frac{1}{2}$	226 $\frac{1}{2}$	227 $\frac{1}{2}$
Tumblers	6	6	8
Per doz.	\$9.00	11.50	14.50

No. 226 $\frac{1}{2}$   
Style Nos. 225 $\frac{1}{2}$  to 227 $\frac{1}{2}$ .

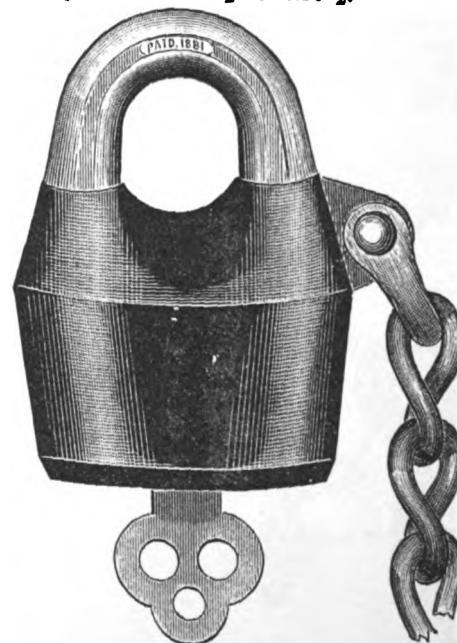


Fig. 2783.

## BRASS, BRONZE AND WROUGHT IRON PAD LOCKS.

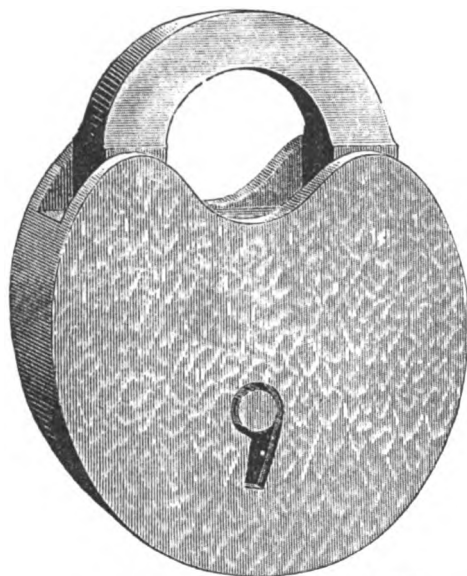
BRASS PAD LOCK.  
All Brass Inside Works.

Fig. 2784.

Prices, Brass Self Locking Pad Locks.  
Fig. 2784.

All brass works, circular bolt and compound tumblers.  
All over 1½ inches have both compound and ratchet tumblers.

Nos.	Sizes.		Per Dozen.	
			1 Key.	2 Keys.
32	1½ ins.	without drop	\$3.50	\$4.50
34	1½ "	" " "	4.00	5.00
36	1½ "	" " "	5.00	6.00
38	1½ "	" " "	6.00	7.00
40	1½ "	" " "	6.75	8.00
40A	1½ "	with drop	7.50	8.75
40B	1½ "	" spring drop	8.25	9.50
42	2¼ "	without drop	7.50	8.75
42A	2¼ "	with drop	8.25	9.50
42B	2¼ "	" spring drop	9.00	10.25
44	2½ "	without drop	9.00	10.50
44A	2½ "	with drop	9.75	11.25
44B	2½ "	" spring drop	10.50	12.00

## Prices, Deitz Bronze Self Locking Pad Locks.

With Flat Steel Keys, Fig. 2785.

Without Chain, 2 Keys each.

No. 232, 1½ ins., 3 tumblers	per doz.,	\$10.50
" 242, 1½ " 3 " "	"	12.00
" 252, 2¼ " 3 " "	"	13.50
" 262, 2¼ " 3 " "	"	15.00
" 265, 2¼ " 4 " "	"	16.80

With Tinned Chain. 2 Keys each.

No. 233, 1½ ins., 3 tumblers	per doz.,	\$12.75
" 253, 2¼ " 3 " "	"	15.90
" 263, 2¼ " 3 " "	"	17.40
" 266, 2¼ " 4 " "	"	19.20

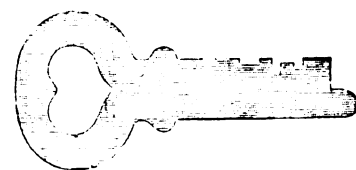
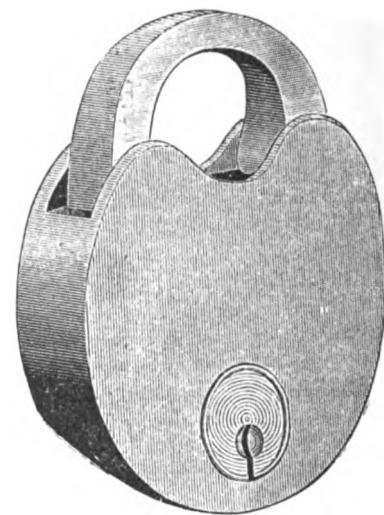
BRONZE METAL PAD LOCK.  
With Flat Steel Key.

Fig. 2785.

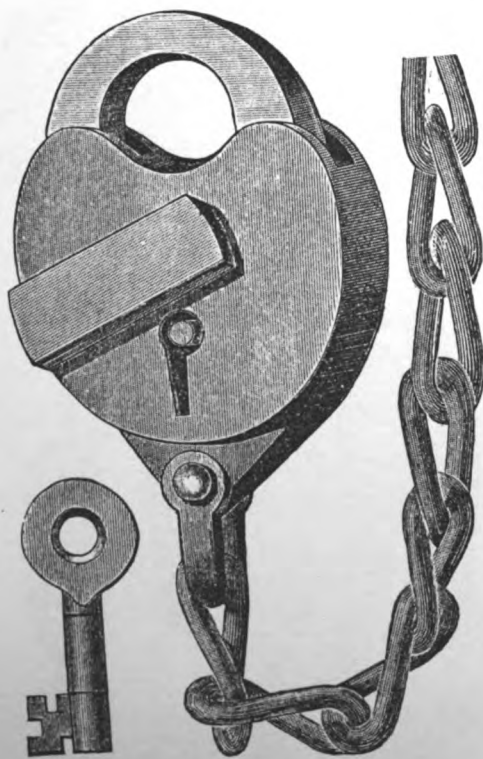
BRASS RAILROAD PAD LOCK.  
For Switches and Freight Cars.

Fig. 2786.

Prices, Brass Self Locking Railroad Pad Locks,  
Without Keys.

For Switches and Freight Cars, Fig. 2786.

No. 1RR, 2½ ins., loose drop with chain	per doz.,	\$12.25
" 2RR, 2½ " spring " " " "	"	12.75
" 3RR, 3 " loose " " " "	"	15.50
" 4RR, 3 " spring " " " "	"	17.50
" 5RR, 3 " " " " " 3	"	
rack tumblers	"	21.50
" 6RR, 2½ ins., spring drop with chain,	"	
3 rack tumblers	"	16.50

## Prices of Keys.

For Pad Locks. Nos. 1RR 2RR 3RR 4RR 5RR 6RR	
Per dozen	\$1.25 1.25 2.50 2.50 2.50 1.50

Nos. 2RR and 6RR are the regular switch and freight car locks.

## Prices, Wrought Iron Pad Locks, Fig. 2787.

Japanned, Steel Keys.

Nos.	Sizes.	Changes.	Per Dozen.	
			1 Key.	2 Keys.
385	2½ ins.	6 Plain drop	\$6.70	\$7.75
386	2½ "	6 Fancy " "	7.10	8.15
403	2½ "	12 without drop	7.95	9.00
407	2½ "	12 Fancy " "	8.75	9.80
607	2¾ "	12 " " "	10.00	11.05
719	3 " "	12 " " "	11.70	12.75
818	3¼ "	12 " " "	12.10	13.15

## Prices, Wrought Iron Pad Locks, with Chain.

Japanned, Steel Keys.

Nos.	Sizes.	Changes.	Per Dozen.	
			1 Key.	2 Keys.
386C	2½ ins.	6 Fancy drop	\$9.20	\$10.25

Japanned, Pin Keys.

369C	2½ ins.	12 Plain drop	\$15.00	\$16.15
------	---------	---------------	---------	---------

No. 369C is especially designed for railroad purposes.

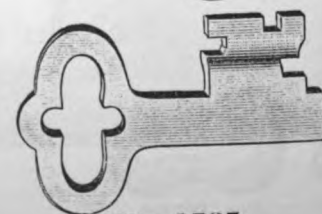
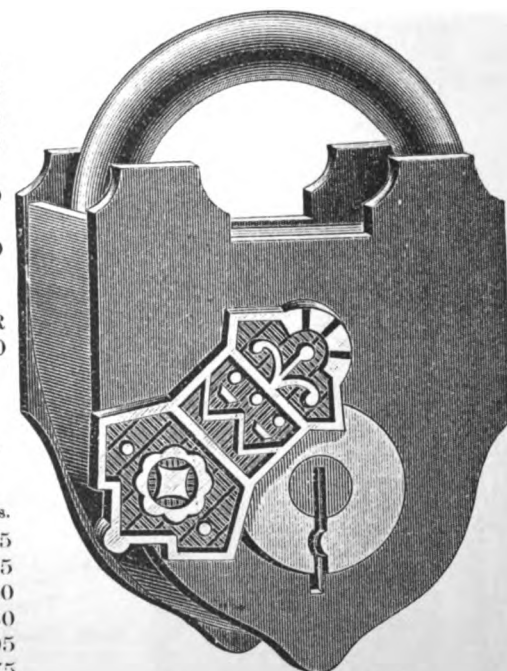
WROUGHT IRON PAD LOCK.  
No. 386.

Fig. 2787.

**Patent Lead Seal,  
With Braided Wire.**



**Fig. 2788.**



**Fig. 2789**



**Fig. 2790.**

The best press made. Sets either front or side. Made from steel castings. All working parts are hardened and tempered.

No. 1, Press complete.....	each, \$5.00
“ 2, “ “ .....	“ 4.00
“ 3, “ “ .....	“ 5.00
“ 4, “ “ .....	“ 4.50



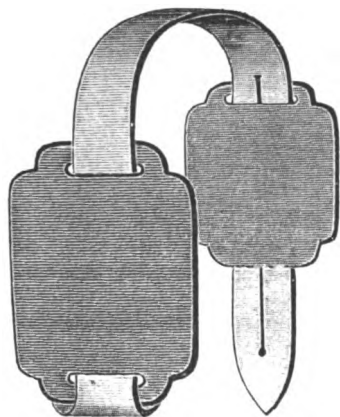
**Fig. 2791.**



**Fig. 2792.**

Fig. 2788.						Prices, Patent Lead Seals and Wires and Tin Shackles.		Fig. 2792.					
Patent Lead Seals,	with	7 inch	4-ply	braided wire	..... per 1000,	\$1.50	Patent Lead Seals, with 10 inch	2-ply plain tinned wire	.... per 1000,	\$3.00			
"	"	10	4-ply	"	"	5.00	"	"	7	2-ply flat tinned wire	.....	"	2.75
"	"	7	6-ply	twisted tinned wire	.....	4.00	"	"	10	2-ply	"	"	3.00
"	"	10	6-ply	"	"	4.50	Tin Shackles, with rivets, 7 inch	.....	"	"	"	"	2.50
"	"	7	3-ply	plain tinned wire	.....	2.75	"	"	10	"	"	"	3.00
"	"	10	3-ply	"	"	3.00	Cording Lead Seals, U. S. Government standard	.....	"	"	"	"	6.00
"	"	7	2-ply	"	"	2 50	Hemp Cord for same	.....	per lb.,	"	"	"	.35

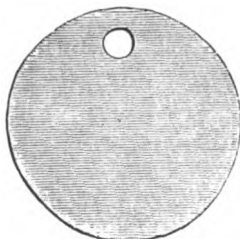
### Reversible Baggage Check.



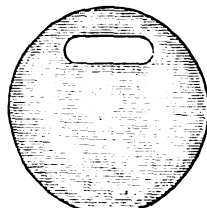
**Fig. 2793.**

**Reversible Baggage Checks.** Initials of company branded on each strap.

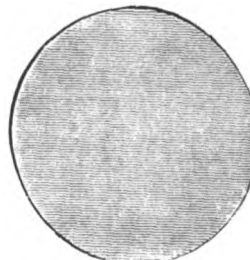
Per 100 .....	\$12.00
Baggage Straps...per 100,	3.00



**Fig. 2794.**



**Fig. 2795.**



**Fig. 2796.**

**Prices, Brass Checks.**  
**Fig. 2794.**

Prices, Brass Checks, Fig. 2795.					
No.	8	15	2	25	22
Diam., ins.	1 $\frac{1}{16}$	1 $\frac{1}{4}$	1 $\frac{3}{4}$	1 $\frac{1}{2}$	1 $\frac{1}{4}$
Per 100.	\$0.75	1.00	1.20	1.60	2.50

Prices, Brass Checks, Fig. 2706.							
Nos.....	9	10	18	13	19	24	23
Diam., ins.....	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$
Per 100.....	\$0.50	.60	.75	1.00	1.20	1.60	2.50

<b>Prices, Stamping Brass Checks, with Figures and Letters.</b>	
Figures not exceeding $\frac{3}{8}$ inch on any check.....	extra per 100, \$1.00
" " " $\frac{1}{2}$ or $\frac{5}{8}$ inch on any check.....	" " 2.00
Letters on any check extra at the rate of $\frac{1}{2}$ cent per letter.	

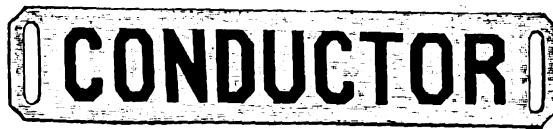


**Fig. 2797.**

**Local Baggage Checks.**  
Initials of company branded  
on each strap.  
Per 100 .....\$11.00  
Baggage Straps, pr 100, 3.00

**Prices, German Silver Badges.**  
**Fig. 2708.**

Stamped Conductor, Brakeman or Baggage Master.  
Each ..... \$0.30

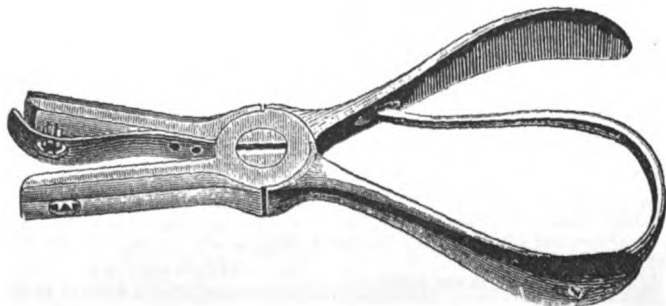


**Fig. 2798.**

### Prices, German Silver Badges.

Shape and size, Fig. 2798.  
 Stamped to order with any desired lettering.  
 Each ..... \$0.40

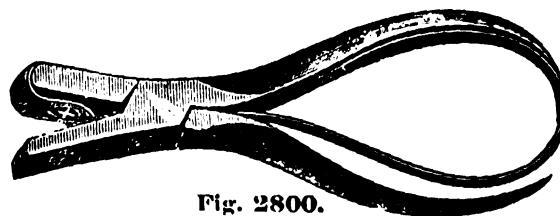
### CONDUCTORS' PUNCH.



**Fig. 2799.**

**Nickel Plated, fancy figures.....per doz., \$18.00**

I can furnish above Punches to cut any letter of the alphabet or any fancy pattern that may be desired.



**Fig. 2800.**

No. 1, round hole, rubber spring, nickel plated.....	per doz., \$10.00
" 2, " " steel " " " " .....	" 11.00
" 3, fancy figure, " " " " .....	" 12.00
" 4, " " rubber, " " " " .....	" 11.00
" 5, " " " " polished .....	" 9.00
" 6, round hole " " " " .....	" 8.00

# CONDUCTORS' PUNCHES, DATE STAMPS, TICKET DATERS, ETC.

THE HANSCOM IMPROVED OPEN MOUTH PUNCH.

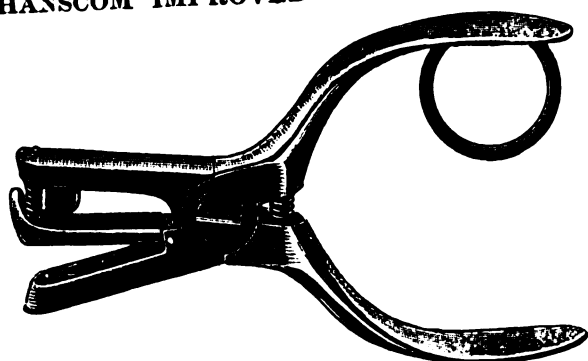


Fig. 2801.

This is an exceptionally strong Punch and adapted for all classes of tickets.  
Per doz. .... \$30.00

HILLS' NO. 3 TICKET PUNCH,  
With Hanscom's New Patent Automatic Cutter.



Fig. 2803.

This device for destroying the parts punched out so they cannot be put back in the ticket, is the only perfect invention for this purpose.

No. 3	Punch with Patent Automatic Cutter.....	per doz.,	\$27.00
" 3B	" for Baggage Check Tickets, etc.....	"	36.00
" 3L <sub>2</sub>	" " Tickets.....	"	25.00
" 3L	" Limited Tickets.....	"	25.00
" 3D	" Duplex and Commutation Tickets.....	"	27.00
" 4	" reaches 1 1/4 ins. for Duplex and 1000 mile tickets.....	"	25.00
" 2	" " 1 1/4 ins. for Thin 1000 mile tickets.....	"	25.00

HILL'S NO. 1 TICKET PUNCH.

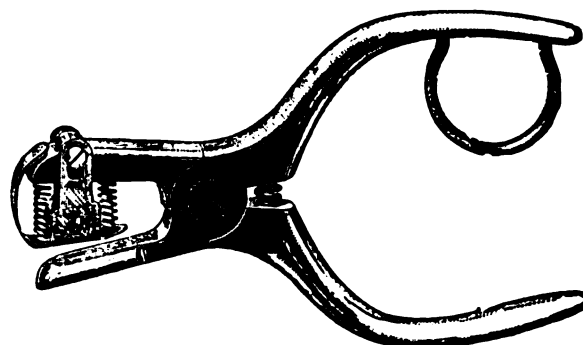


Fig. 2802.

The above Punch works equally well on both thin and thick tickets.  
For Local or other tickets.....per doz., \$30.00

IMPROVED PATENT TICKET PUNCH.

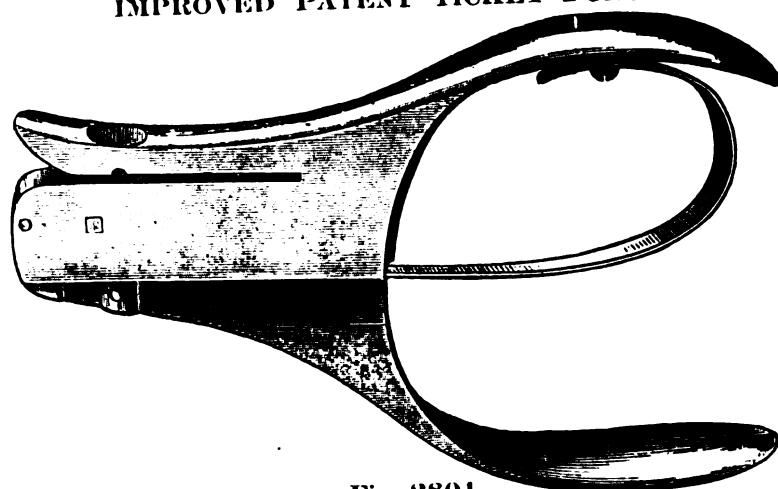


Fig. 2804.

This Improved Punch is the best made for any ticket, including thousand mile, commutation, duplex, etc.  
Extra finish, nickel plated. Every punch warranted.  
No. 1, Single Dies, any single letter, figure or design..... per doz., \$36.00  
" 2, Double " B.C., 1/2, etc..... " 48.00

THE IMPROVED MODEL IMPROVED NO. 1 R. R. STAMP. NEW AMERICAN DATER.

RUBBER BAND DATER.



Fig. 2805.

This Stamp has a nickel plated metal frame; the days, months and years are on endless rubber bands, which are instantly brought into position by simply turning the wheels from the outside. It will take rubber die size 1 1/4 and 1 3/4 inches.  
With Die, Ink and Pads...each, \$3.00  
With Die only..... " \$2.60

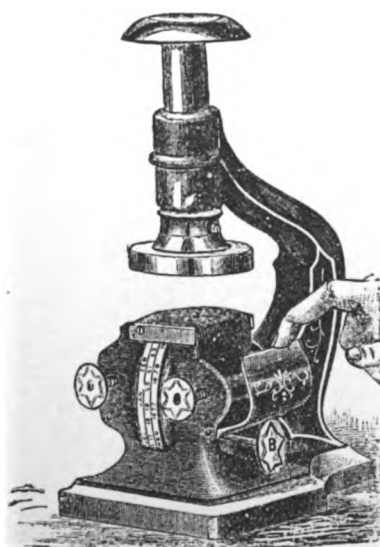


Fig. 2806.

This Dater is used chiefly for stamping tickets.

The date wheels and die are made from hard brass and are arranged in the lower part of stamp as shown in cut. It will take die 1 1/4 inches diameter.

Price, complete.....each, \$7.00

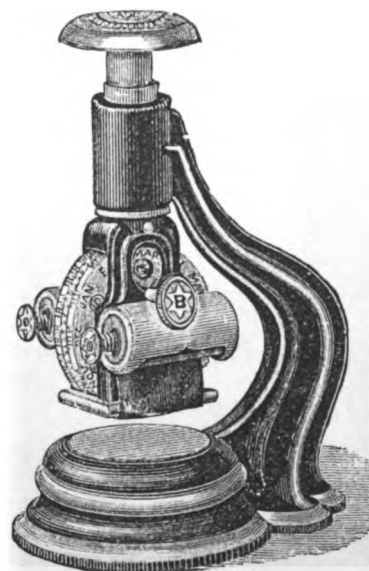


Fig. 2807.

This is the latest pattern and most perfect and durable Wheel Dating Stamp for general business on the market.

The date wheels and die are made of hard brass.  
No. 6 Die 1 1/4 ins. diam...each, \$7.00  
" 9 " 1 1/2 " " " " 8.00  
Prices include die cut to order with any desired lettering and proper size ribbon.

THE STANDARD SELF-INKER.

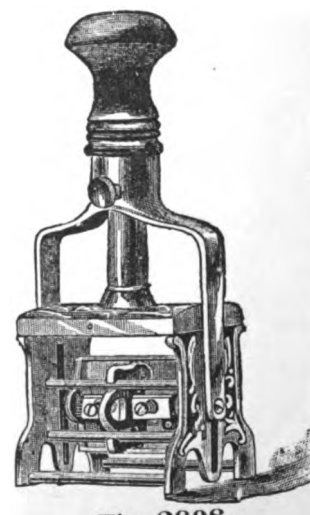


Fig. 2808.

This is the best Self-Inker made.  
Prices include stamp fitted with rubber die and a supply of ink.

No.	Size of Die Plate.	Each.
1	1 3/8 x 2 1/4 ins.	\$3.00
2	1 3/8 x 3 " "	4.00
3	1 3/8 x 3 1/2 " "	6.00
4	2 3/8 x 3 1/2 " "	10.00

Any of the above with dates \$2.00 extra each.



**COPYING PRESSES, PAILS, BUCKETS, ETC.**

**SOLID ARCH COPYING PRESS.**



**Fig. 2809.**

**No. 1 Press.**

With Heavy Cast Iron Arch or Yoke.

Size of Platen 10x13 inches.

Finished in Color ..... each, \$11.00  
Black Japan, with Gilt Scroll..... " 10.50

**No. 2 Press.**

With Heavy Cast Iron Arch or Yoke,

For General Counting Room use.

Size of Platen 11x15 inches.

Finished in Color ..... each, \$15.00  
Black Japan, with Gilt Scroll..... " 14.25

**No. 3 Press.**

With Heavy Cast Iron Arch or Yoke,

For General Counting Room use.

Size of Platen 12x18 inches.

Finished in Color ..... each, \$20.00  
Black Japan, with Gilt Scroll..... " 19.00

**RUBBER FIRE RUBBER FIRE  
PAIL BUCKET.**



**Fig. 2812.**



**Fig. 2813.**

**Prices, Rubber Pails and Buckets.**

Fire Pails, Fig. 2812 ..... per doz., \$36.00  
" Buckets, Fig. 2813 ..... " 42.00  
Acid " " " " " 60.00

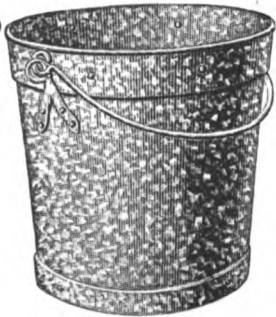
**Price, Leather Fire Buckets.**

Best Oak Tanned Leather..... per doz., \$36.00

**GALVANIZED IRON EXTRA  
WATER PAIL. HEAVY WROUGHT  
IRON PAIL.**



**Fig. 2818.**

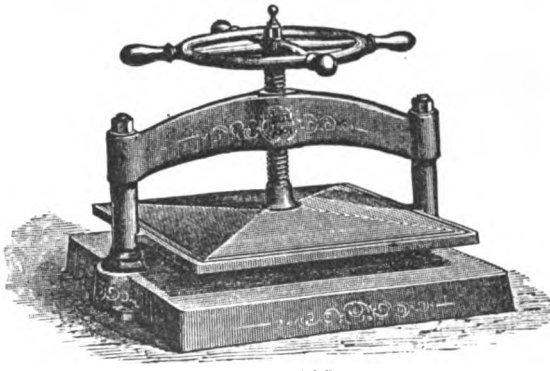


**Fig. 2819.**

**Prices, Galvanized Iron Pails. Fig. 2818.**  
Capacity, quarts... 7 10 12 14 16  
Per doz.....\$4.75 5.50 6.00 6.25 7.50

**Prices, Extra Heavy Wrought Iron Pails. Fig. 2819.**

Made of Heavy Sheet Iron with Double Braced Bottom and Heavy Wrought Iron Rim to strengthen top. Heavy Wrought Iron Ears and Bail.  
Black Iron, 14 quarts..... per doz., \$24.00  
Galvanized, " " " " " 26.00



**Fig. 2810.**

**LARGE STEEL ARCH PRESS.**

For Railroad, Express and Transportation Companies.

Size of Platen 22x24 inches.

This Press is designed for the heaviest work in copying manifests, way bills, etc. The arch is of Steel; the Bed Plate is operated by a wheel with handles on the rim.

Finished in Color ..... each, \$80.00  
Black Japan, with Gilt Scroll ..... " 76.00

**WATER COOLERS.**



**Fig. 2814.**



**Fig. 2815.**

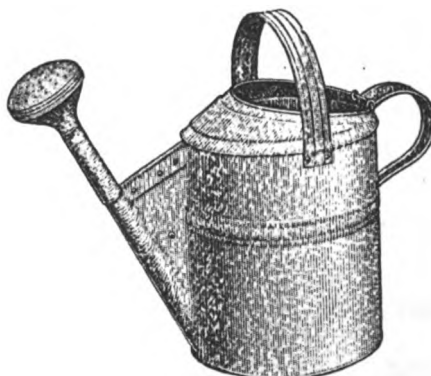
**Prices, Water Coolers. Fig. 2814.**  
Assorted Decorations.

Gallons.....	1 1/2	2	3	4	6
Each.....	\$3.00	5.00	5.65	6.85	8.75
Gallons.....	8	10	12	14	
Each.....	\$10.00	13.75	18.75	22.50	

**Prices, Water Coolers. Fig. 2815.**

Porcelain Lined Cylinders. Handsomely Decorated.  
Galls.. 2 3 4 6 8 10  
Each..\$15.00 18.00 21.00 25.00 30.00 36.00

**GALVANIZED WATER POT.**



**Fig. 2820.**

In this Water Pot the body and spout are stamped out of one piece of sheet iron. For strength and durability it cannot be surpassed.  
Quarts. 6 8 10 12 16 20  
Per doz..\$12.00 15.00 18.00 21.00 24.00 42.00

**TIN WATER POTS.**

Painted. Patent Zinc Roses.  
Quarts. 2 4 6 8 10 12  
Per doz..\$11.25 13.75 16.25 20.00 22.50 27.00

**COLUMN ARCH COPYING PRESS.**



**Fig. 2811.**

**No. 4 Press.**

Cast Iron Arch Columns, Nickel Plated.

Size of Platen 10x13 inches.

Finished in Color ..... each, \$13.00  
Black Japan, with Gilt Scroll ..... " 12.50

With Wrought Iron Arch \$4.00 extra.

**No. 5 Press.**

Cast Iron Arch Columns, Nickel Plated.

Size of Platen 12x16 inches.

Finished in Color ..... each, \$20.00  
Black Japan, with Gilt Scroll ..... " 19.25

With Steel Arch \$5.00 extra.

**No. 6 Press.**

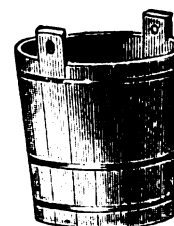
Cast Iron Arch Columns, Nickel Plated.

Size of Platen 12x18 inches.

Finished in Color ..... each, \$25.00  
Black Japan, with Gilt Scroll ..... " 24.00

With Steel Arch \$5 50 extra.

**OAK OAK  
DECK BUCKET. STABLE PAIL.**



**Fig. 2816.**



**Fig. 2817.**

**Prices, Oak Buckets and Pails.**

Deck Buckets, 3 iron hoops, Fig. 2816.....	Per doz.	\$6.00
" " 3 galv'd iron hoops, Fig. 2816		7.35
Stable Pails, light, 3 iron hoops, Fig. 2817		7.00
" " heavy, 3 " " "		8.00
" " 3 galv'd " " "		10.00

**INDURATED GALVANIZED IRON  
FIBRE FIRE BUCKET.  
WATER PAIL.**



**Fig. 2821.**



**Fig. 2822.**

**Prices, Indurated Fibre Pails. Fig. 2821.**

The strongest and lightest pails now made.

Star Water Pails, 12 quarts.....	per doz.,	\$6.00
Star Fire " " " " "		6.67
Deck Pails, Heavy Bail, 12 quart..		7.35
Fire " 14 quart .....		7.35
Stable " Flush Bottom, 14 qt..		8.00
" " " 16 " " "		

**Prices, Galv'd Fire Buckets. Fig. 2822.**

Capacity, quarts.....	10	12	14
Per doz.....	\$4.50	5.00	5.50



# COAL HODS, ASH CANS, SNOW SHOVELS, ETC.

IRON COAL HOD.



Fig. 2823.

Prices, Japanned.

15 inches	per doz.,	\$8.25
16 "	"	8.75
17 "	"	9.50
18 "	"	10.00

Prices, Galvanized.

15 inches	per doz.,	\$11.50
16 "	"	12.50
17 "	"	13.50
18 "	"	14.50

GALVANIZED IRON ASH CAN.



Fig. 2826.

Galvanized Iron, Heavy.			
No. 2 $\frac{1}{2}$	14x19 inches	each,	\$4.00
" 3	15x26 "	"	4.50
" 4	17x26 "	"	5.25
" 5	18x26 "	"	5.50
" 6	20x26 "	"	6.50

IMPROVED IRON FIRE SHOVEL.



Fig. 2824.

Nos.	Size of Blade.	Stamped from One Piece of Iron.		Per Gross.
		Round Handle.	Entire Length.	
2	4 $\frac{1}{2}$ x 7 inches		15 inches	\$11.00
5	4 $\frac{3}{4}$ x 8 "		16 "	15.00
15	4 $\frac{3}{4}$ x 8 "		16 "	21.00
25	4 $\frac{3}{4}$ x 8 "		16 "	21.00
7	5 x 8 "		23 "	25.00
17	5 x 8 "		23 "	35.00
27	5 x 8 "		23 "	40.00

GALVANIZED IRON ASH CAN.  
With Heavy Bail for Hoisting.

Fig. 2827.

With Heavy Bail for Hoisting.

With Heavy Bail for Hoisting.			
No. 2 $\frac{1}{2}$	14x19 inches	each,	\$5.50
" 3	15x26 "	"	6.50
" 4	17x26 "	"	7.25
" 5	18x26 "	"	7.50
" 6	20x26 "	"	8.50

With Eight Wood Straps.			
No. 7	15x26 inches	each,	\$7.25
" 8	17x26 "	"	8.00
" 9	18x26 "	"	8.25
" 10	20x26 "	"	9.25

IRON FUNNEL COAL HOD.



Fig. 2825.

Prices, Japanned.

15 inches	per doz.,	\$12.00
16 "	"	13.00
17 "	"	14.00
18 "	"	15.00

Prices, Galvanized.

15 inches	per doz.,	\$15.00
16 "	"	16.00
17 "	"	18.00
18 "	"	20.00

GALVANIZED IRON ASH CAN.

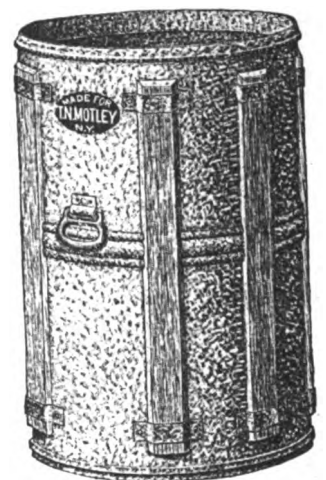


Fig. 2828.

Galvanized Iron, Heavy.  
With Eight Wood Straps.

No. 7	15x26 inches	each,	\$5.25
" 8	17x26 "	"	6.00
" 9	18x26 "	"	6.25
" 10	20x26 "	"	7.25

ICE CHOPPER AND SCRAPER.



Fig. 2829.

No. 1, Small, Solid Cast Steel Blades	per doz.,	\$5.00
" 2, Medium " " "	"	6.00
" 3, Large " " "	"	7.50

IMPROVED BASSWOOD SNOW SHOVEL.



Fig. 2830.

The Blade of this Shovel is of first-class basswood, size 12 x 15 $\frac{1}{2}$  inches and 14 x 16 $\frac{1}{2}$  inches. Handle and Head of selected hardwood; standard length, 31 $\frac{1}{2}$  feet; pointed with 1 $\frac{1}{2}$  inches steel, secured by rivets, and three runner braces on back. There is a band at bottom of D on handle to prevent splitting and to add extra strength.

12 inch Blade.....per doz., \$6.00      14 inch Blade.....per doz., \$7.00

PARK OR RAILROAD DEPOT PLATFORM SETTEE.

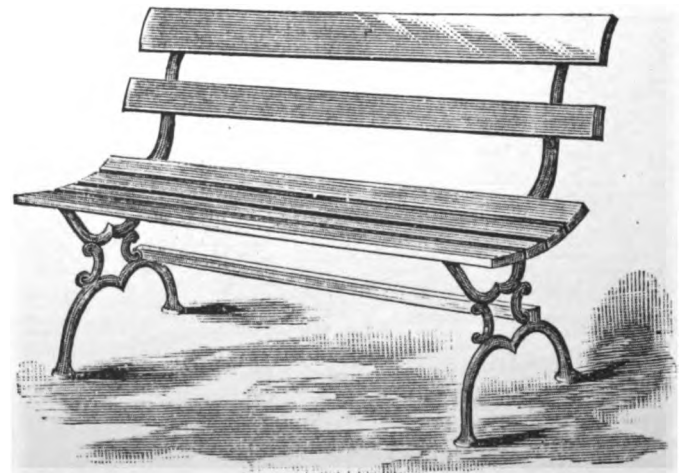


Fig. 2831.

This Settee is made from the best material and finely finished.

No. 1, 31 $\frac{1}{2}$ feet long	each,	\$4.00
" 2, 41 $\frac{1}{2}$ "	"	4.30
" 3, 51 $\frac{1}{2}$ "	"	4.80
" 4, 61 $\frac{1}{2}$ "	with three legs	6.00



## SHIP CHANDLERY AND SAIL MAKERS' HARDWARE.

## CALKING TOOLS.



Cast Steel.			
No. 0, Calking Irons, plain.....	per doz.,	\$4.50	
" 1, " " 1 crease.....	"	4.65	
" 2, " " 2 ".....	"	4.75	
" 3, " " 3 ".....	"	4.85	
Dumb or Deck Irons.....	per doz.,	\$5.50	
Bent or Single Crook Irons.....	"	5.50	
Double Crook Irons.....	"	5.50	
Sharp Irons.....	"	5.50	
Reefing or Clearing Irons.....	per doz.,	\$5.50	
Spike Irons.....	"	5.50	
Boat Calking Irons, 5 ins., plain..	"	5.00	
" " " 5 " 1 crease.....	"	5.50	

## EXTRA QUALITY CAST STEEL CALKERS' TOOLS.

Stamped "C. Drew &amp; Co."

Calking Irons.....	per doz.,	\$8.00	
Making Irons.....	"	8.00	
Sharp Irons.....	"	10.50	
Deck or Dumb Irons.....	"	9.00	
Clearing Irons.....	per doz.,	\$7.00	
Spike Irons.....	"	6.50	
Single Crook Irons.....	"	10.00	
Double Crook Irons.....	"	10.50	
Treenail Irons.....	per doz.,	\$ 6.50	
Coppering Hammers.....	"	12.00	
Coppering Punches.....	"	6 00	
Rochester or Western Pattern Irons	"	12.50	

## HAWSING IRON.

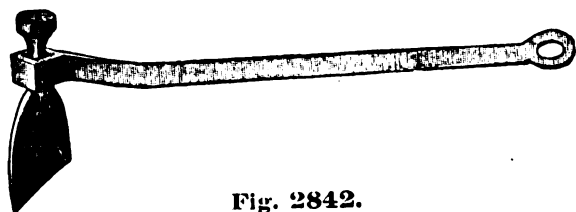


Fig. 2842.

Steel Faced.	
Black.....	per doz., \$15.00
Polished.....	per doz., \$17.00
HAWSING MALLETS OR BEETLES.	
Live Oak, extra.....	per doz., \$26.50
Live Oak.....	" 21.50
White Oak.....	" 19.50

## SHIP SCRAPER.

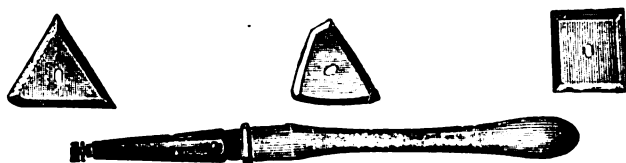


Fig. 2844.

Wood Handles.		Wrought Iron Sockets.	
No. 1, Blades 1 1/4 inch thick, iron and steel welded.....	per doz.,	\$ 7.50	
" 1 1/2, " 1 1/4 " steel, extra finish.....	"	12.00	
" 2, " No. 1 1/4 best cast steel.....	"	5.50	
" 3, " 1 1/4 steel, black sockets.....	"	3.50	
" 4, " 1 1/4 " 2 1/2 inches square.....	"	5.50	
" 5, " 1 1/4 " 5 foot handles.....	"	9.00	

## SHEET BRASS EYELET GROMMETS.

Before being Inserted.

After being Inserted.



Fig. 2846.

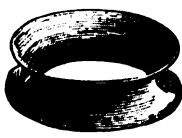


Fig. 2847.

Nos.	1	2	3	4	5	6	7	8	9	10	15
Diam. of hole, ins.	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	2
Per gross	\$1.15	1.35	1.60	1.80	2.25	2.70	3.15	5.00	5.85	6.75	8.50

## STEEL CUTTING PUNCHES.

Regular pattern for punching holes for grommets.											
Nos.	0	1	2	3	4	5	6	7	8	9	10
Each	\$1.00	1.10	1.20	1.30	1.50	1.75	2.00	2.25	2.50	2.75	3.00

## BRASS HEAD GROMMET KNOBS.

To be used with No. 3 C. P. R. R. Grommets, for carpets, matting, etc.	
Per gross	\$5.50

## CONICAL POINTED ROLLED RIM GROMMETS.

Cast Brass.

Sheet Brass.



Fig. 2848.

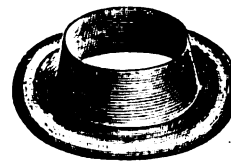


Fig. 2849.

Nos.	2	3	4	5	6	7	8
Diam. of hole as inserted, ins.	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4
Per gross	\$2.00	2.70	3.60	4.75	5.50	7.65	8.10

## SETTING DIES.

For inserting Grommets, Figs. 2846 to 2849.											
Nos.	0	1	2	3	4	5	6	7	8	9	10
Per set	\$2.00	2.15	2.25	2.35	2.50	2.70	2.80	3.00	3.15	3.40	4.30

## CALKING Mallet.

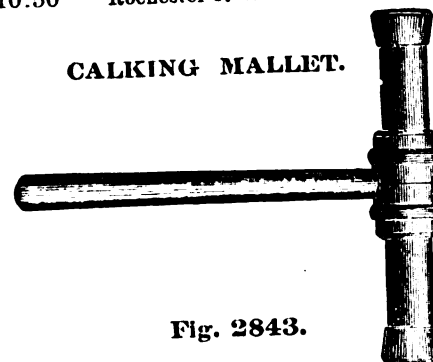


Fig. 2843.

No. 0, steel rings, polished wood, made to order.....	per doz.,	\$32.00	
" 1, " " " " " " " ".....	"	25.00	
" 2, " " varnished wood, regular.....	"	24.00	
" 3, " " " " second quality.....	"	21.00	
" 4, iron rings, polished wood, extra.....	"	24.00	
" 5, " " " " " " " ".....	"	22.50	
" 6, " " varnished wood, regular.....	"	20.00	
" 7, " " " " second quality.....	"	18 00	
" 8, " " polished white oak.....	"	15.00	

## MARLINE SPIKE.



Fig. 2845.

Japanned, Steel Points.

Length, 10, 11, 12, 13, 14, 15 and 16 inches.....	per lb.,	\$0.18	
---	----------	--------	--

Polished, Steel Points.

Length, inches.....	10	11	12	13	14	15	16
Per doz.....	\$4.00	4.50	5.00	5.50	6.50	7 50	9.50

SHIP CHANDLERY AND SAIL MAKERS' HARDWARE.

OPEN THIMBLE.

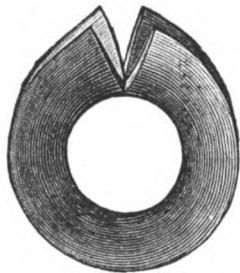


Fig. 2850.

Measurement is outside diameter from edge to edge.

Sizes,  $\frac{3}{4}$ ,  $\frac{7}{8}$ , 1 and  $1\frac{1}{4}$  inches.

Japanned ..... per doz., \$0.24  
Galvanized ..... " \$0.28

Sizes,  $1\frac{3}{8}$ ,  $1\frac{1}{2}$ ,  $1\frac{3}{4}$ , 2,  $2\frac{1}{4}$ ,  $2\frac{1}{2}$ ,  $2\frac{3}{4}$ , 3,  $3\frac{1}{4}$ ,  $3\frac{1}{2}$ ,  $3\frac{3}{4}$ , 4,  $4\frac{1}{2}$ , 5,  $5\frac{1}{2}$  and 6 inches.

Japanned ..... per pound, \$0.17  
Galvanized ..... " .21

TACKLE HOOK AND THIMBLE.  
Wrought Iron.

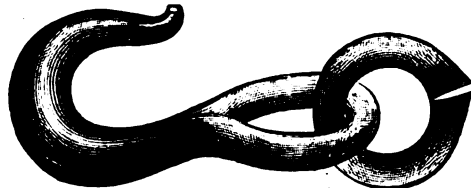


Fig. 2853.

For size measure diameter of iron in the middle of bend.

Sizes,  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1,  $1\frac{1}{2}$ ,  $1\frac{3}{4}$ , 2,  $2\frac{1}{2}$ ,  $2\frac{3}{4}$  inch.

Japanned ..... per doz., \$1.50  
Galvanized ..... " 1.75

Sizes,  $\frac{1}{4}$ ,  $\frac{1}{2}$ , 1,  $1\frac{1}{2}$ ,  $1\frac{3}{4}$ , 2,  $2\frac{1}{2}$ ,  $2\frac{3}{4}$  ins.  
Japanned ..... per pound, \$0.15  
Galvanized ..... " .19

GALVANIZED IRON  
THIMBLES.



Fig. 2851.

Measurement is outside diameter from edge to edge.

Light Thimbles.

Diam., ins.  $\frac{3}{4}$   $\frac{7}{8}$  1  $1\frac{1}{8}$   $1\frac{1}{4}$   $1\frac{3}{8}$   $1\frac{1}{2}$   $1\frac{3}{4}$   
Per doz. \$0.25 .30 .35 .38 .40 .40 .45 .50

Diam., ins. 2  $2\frac{1}{4}$   $2\frac{1}{2}$   $2\frac{3}{4}$  3  $3\frac{1}{4}$   $3\frac{1}{2}$   $3\frac{3}{4}$   
Per doz. \$0.60 .70 .80 .95 1.10 1.35 1.70 2.12

Heavy Thimbles.

Diam., ins. 2  $2\frac{1}{4}$   $2\frac{1}{2}$   $2\frac{3}{4}$  3  $3\frac{1}{4}$   $3\frac{1}{2}$   
Per doz. \$0.70 .85 1.25 1.60 1.70 1.90 2.15

Diam., ins.  $3\frac{3}{4}$  4  $4\frac{1}{4}$   $4\frac{1}{2}$   $4\frac{3}{4}$  5  
Per doz. \$2.80 3.25 3.60 4.30 5.40 6.30

Extra Heavy (Navy Pattern) Thimbles.

Diam., ins. 2  $2\frac{1}{4}$   $2\frac{1}{2}$   $2\frac{3}{4}$  3  $3\frac{1}{4}$   $3\frac{1}{2}$   
Per doz. \$1.15 1.35 1.80 2.00 2.35 2.70 3.00

Diam., ins.  $3\frac{3}{4}$  4  $4\frac{1}{4}$   $4\frac{1}{2}$  4 5  
Per doz. \$3.60 4.00 4.50 5.65 6.10 6.55

Lip or Saddle Thimbles.

Diam., ins.  $2\frac{1}{4}$   $2\frac{1}{2}$   $2\frac{3}{4}$  3  $3\frac{1}{4}$   $3\frac{1}{2}$  4  
Per doz. \$1.35 1.60 1.80 2.25 2.70 3.50 4.00

MATCH OR SISTER HOOKS AND  
THIMBLES.—Wrought Iron.

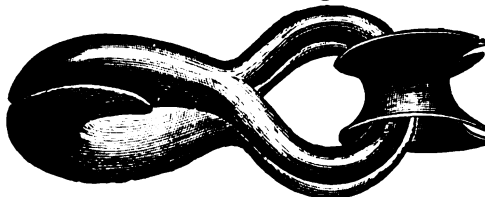


Fig. 2855.

For size measure diameter of iron in the middle of bend with hooks closed.

Sizes,  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1,  $1\frac{1}{2}$ ,  $1\frac{3}{4}$ , 2,  $2\frac{1}{2}$  inch.

Japanned ..... per dozen, \$2.00  
Galvanized ..... " 2.50

Sizes,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1,  $1\frac{1}{2}$ ,  $1\frac{3}{4}$ , 2,  $2\frac{1}{2}$ ,  $2\frac{3}{4}$ , 3, 4 inches.

Japanned ..... per pound, \$0.18  
Galvanized ..... " .22

SWIVEL HOOK WITH THIMBLE.

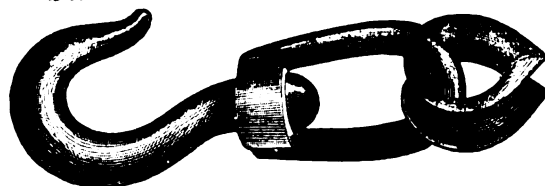


Fig. 2856.

Prices, With or Without Thimbles.

For size measure diameter of iron in the middle of bend.

$\frac{1}{2}$  and  $\frac{5}{8}$  inch, Japanned ..... per dozen, \$3.00  
 $\frac{1}{2}$  "  $\frac{5}{8}$  " Galvanized ..... " 3.50  
 $\frac{3}{4}$  "  $\frac{7}{8}$  " Japanned ..... per pound, .30  
 $\frac{3}{4}$  "  $\frac{7}{8}$  " Galvanized ..... " .34  
1,  $1\frac{1}{8}$  and  $1\frac{1}{4}$  inches, Japanned ..... " .25  
1,  $1\frac{1}{8}$  "  $1\frac{1}{4}$  " Galvanized ..... " .29

Price, Hammock Hooks with Plates. Fig. 2857.

Galvanized Iron ..... per dozen, \$3.00

Prices, Hammock Hooks with Thimbles. Fig. 2858.

Galvanized Iron.

$\frac{1}{2}$  inch.. per doz., \$1.75  $\frac{3}{4}$  inch.. per doz., \$2.00  $1\frac{1}{2}$  inch.. per doz., \$2.25

BRASS THIMBLE.



Fig. 2852.

Measurement is outside diameter from edge to edge.

Diameter, inches.  $\frac{3}{4}$  1  $1\frac{1}{4}$   
Per dozen..... \$0.65 .70 .75

Diameter, inches.  $1\frac{1}{2}$   $1\frac{3}{4}$  2  
Per dozen..... \$1.00 1.25 1.50

Sizes,  $2\frac{1}{4}$  to 5 inches, inclusive.

Per pound ..... \$0.70

SMALL EYE BLOCK HOOK.  
Wrought Iron.

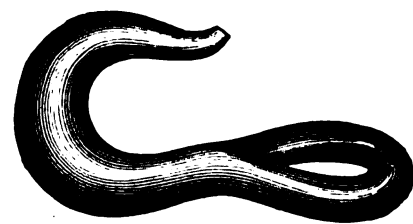


Fig. 2854.

Prices, Single Hooks.

$\frac{1}{2}$  and  $\frac{3}{4}$  inch, Black..... per doz., \$2.00  
 $\frac{1}{2}$  and  $\frac{3}{4}$  " Galvanized ..... " 2.25  
to 2 inches, Black..... per lb., .16  
" 2 " Galvanized ..... " .20

Prices, Double or Match Hooks.

$\frac{1}{2}$ ,  $\frac{3}{4}$  and  $1\frac{1}{2}$  inch, Black..... per doz., \$2.50  
 $\frac{1}{2}$ ,  $\frac{3}{4}$  and  $1\frac{1}{2}$  inch, Galvanized... 2.75  
to 2 inches, Black..... per lb., .20  
" 2 " Galvanized..... " .24

HAMMOCK HOOK.  
With Plate.

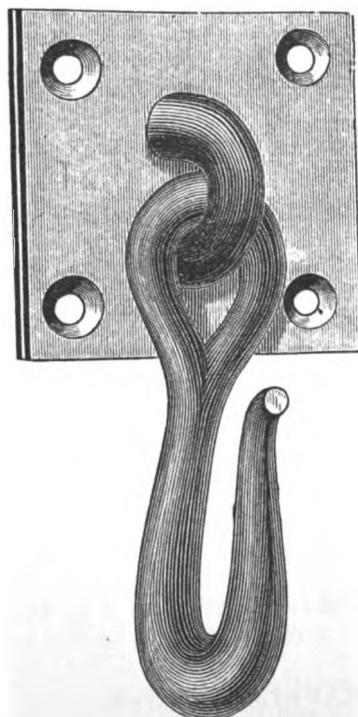


Fig. 2857.

HAMMOCK HOOK.  
With Thimble.



Fig. 2858.

## SHIP CHANDLERY AND SAIL MAKERS' HARDWARE.

HAMMOCK HOOK.  
With Eye Bolt.

Fig. 2859.

Galvanized Iron..... per doz., \$2.50    Galvanized,  $\frac{3}{8}$  in. per doz., \$1.60     $\frac{7}{8}$  in. per doz., \$1.80     $\frac{1}{2}$  in. per doz., \$2.00

SCREW HAMMOCK HOOK.



Fig. 2860.

SCREW RING BOLT.  
Wrought Iron.

Fig. 2861.

Sizes, inch.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$
Plain....per doz.,	\$1.50	2.20	2.40	3.00	3.30	4.25	8.85	12.00	17.00
Galvanized "	1.60	2.40	2.80	3.20	3.60	4.80	9.60	13.50	19.00

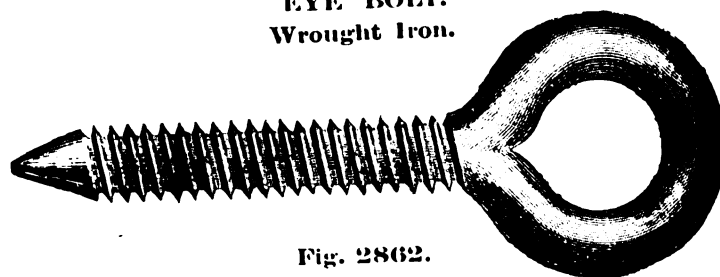
EYE BOLT.  
Wrought Iron.

Fig. 2862.

Sizes, inch.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$
Plain.....per doz.,	\$0.90	1.10	1.50	1.90	2.25	2.95	5.30	7.25	8.50				
Galvanized. "	1.00	1.20	1.60	2.00	2.40	3.20	5.80	8.00	9.60				

GALVANIZED IRON CLEAT.



Fig. 2863.

Nos.....	1	2	3	4	5	6
Length, ins..	2	3 $\frac{1}{4}$	3 $\frac{3}{4}$	4 $\frac{1}{2}$	5 $\frac{3}{4}$	6 $\frac{1}{2}$
Per doz.....	\$0.65	1.00	1.50	1.65	1.85	2.50

CAST IRON CLEAT.



Fig. 2864.

Sizes, 5, 7, 8 $\frac{1}{2}$ inches.	Plain...per lb.,	Galvanized...per lb.,
5, 7, 8 $\frac{1}{2}$ inches.	\$0.09	\$0.12
Sizes, 10 $\frac{1}{2}$ , 13, 15, 18, 24, 28, 32, 36, 40 ins.		
Plain...per lb.,	\$0.06	Galvanized...per lb., \$0.09

CAST IRON CHOCK.



Fig. 2865.

Sizes, 4, 4 $\frac{1}{2}$ , 5, 5 $\frac{1}{2}$ , 6, 6 $\frac{1}{2}$ , 7 $\frac{1}{4}$ , 8 $\frac{1}{2}$ inches.	Plain...per lb.,	Galvanized...per lb.,
4, 4 $\frac{1}{2}$ , 5, 5 $\frac{1}{2}$ , 6, 6 $\frac{1}{2}$ , 7 $\frac{1}{4}$ , 8 $\frac{1}{2}$ inches.	\$0.09	\$0.12
Sizes, 10 $\frac{1}{2}$ , 11 $\frac{1}{2}$ , 13, 14, 15, 18, 20, 24, 30 ins.		
Plain...per lb.,	\$0.06	Galvanized...per lb., \$0.09

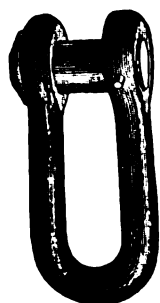
PLAIN CHAIN  
SHACKLE.

Fig. 2866.

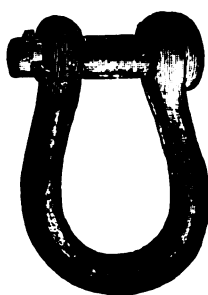
PLAIN ANCHOR  
SHACKLE.

Fig. 2867.

**Prices, Chain and Anchor Shackles.**  
Figs. 2866 and 2867.

Sizes, inches.....	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$ and larger.
Black.....per lb.,	\$0.24	.20	.16
Galvanized ... "	.27	.23	.19

CHAIN PUNCHES.

Steel.....per doz., \$3.60

CHAIN HOOKS.

Made from  $\frac{1}{2}$  inch wrought iron.

Black...per lb., \$0.14    Galvanized...per lb., \$0.17

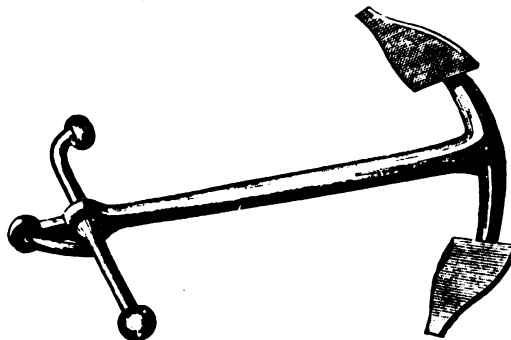
WROUGHT IRON ANCHOR.  
With Loose Stock.

Fig. 2868.

Prices, Loose Stock Anchors.

Sizes.	Black.	Galvanized.
4 to 5 lbs.....per lb.,	\$0.11	\$0.17
6 to 8 " .....	.13	.16
10 to 12 " .....	.12	.15
15 to 30 " .....	.10	.13
35 to 100 " .....	.09	.12

Special prices quoted on larger sizes.

CABLE, CRANE, DREDGE, QUARRY  
AND RAFTING CHAIN.

Special prices quoted on application.

SCREW ANCHOR  
SHACKLE.

Fig. 2869.

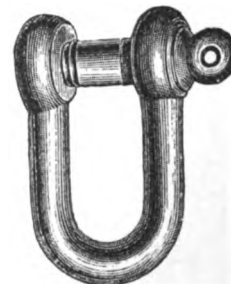
SCREW CHAIN  
SHACKLE.

Fig. 2870.

Prices, Screw Anchor and Chain Shackles.  
Figs. 2869 and 2870.

Sizes, inches ..	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$
Black...per doz.,	\$2.75	2.75	3.00	3.50	4.00
Galvanized "	3.00	3.00	3.25	3.85	4.46
Sizes, inches...	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	1
Black...per doz.,	\$1.50	5.00	5.50	7.00	10.00
Galvanized "	5.00	5.75	6.75	8.70	13.35

GRAPPLING IRONS.

Four Prongs.

Black...per lb., \$0.17    Galvanized...per lb., \$0.20



# LADD'S DISCOUNT BOOK.

**Ladd's Discount Book**  
Is indispensable to every one using percentage, as it is a practical means for rapidly reaching absolutely accurate results without the mental wear of computing, avoiding any possibility of error.  
A few days' use will verify the claim that the book is accurate, rapid, convenient and practical.

*The Old way*

Net of \$73.00 at discount 60, 10, 10, 7½ + 2½ per cent.

60% — 73.00  
10% — 43.80  
10% — 29.20  
7½% — 2.92  
2½% — 26.28  
2.628  
23.652  
1.77.39  
21.87.81 525  
546.9525  
1640.8575  
21.33.11 475

118 26  
59 13  
177 39

*And you cannot feel sure of this till you prove it, after all your figuring, because it is so easy to make a mistake in figuring or misplace the figure as I did in working out the above example. The new way is Accurate, Rapid and Practical.*

**The New Way.**  
Put Your Finger Right on it.

60, 10, 10, 7½ & 2½. Same as 60, 20, 10, 7½ & 2½. 40, 33½, 10, 10, 7½. 37½, 20, 20, 10, 10, 7½. 35, 20, 20, 10, 10, 7½.

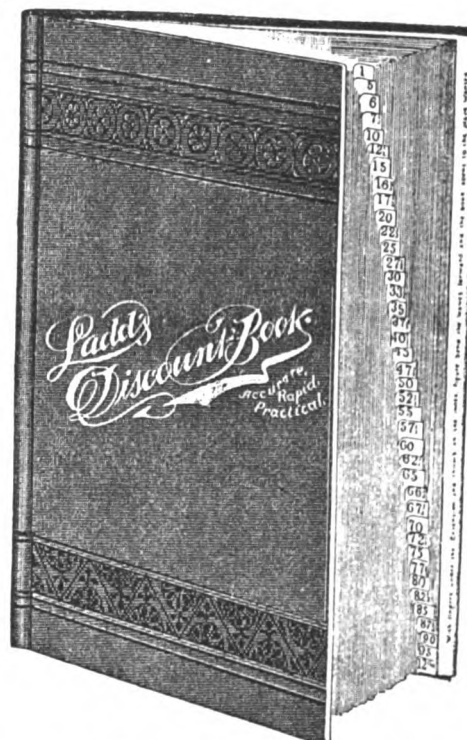
100.29.22	1103.21.43	2106.13.64	3109.05.84	4111.98.05	5114.90.26	6117.82.47	7120.74.67	8123.66
200.58.44	1203.50.65	2206.42.86	3209.35.06	4212.27.27	5215.19.48	6218.11.69	7221.03.89	8223.96
300.87.66	1303.79.87	2306.72.08	3309.64.28	4312.56.49	5315.48.70	6318.40.91	7321.33.11	8324.25.3
401.16.88	1404.09.09	2407.01.30	3409.93.51	4412.85.71	5415.77.92	6418.70.13	7421.62.34	8424.54.55
501.46.10	1504.38.31	2507.30.52	3510.22.73	4513.14.93	5516.07.14	6518.99.35	7521.91.56	8524.83.76
601.75.32	1604.67.53	2607.59.74	3610.51.95	4613.44.15	5616.36.36	6619.28.57	7622.20.78	8625.12.98
702.04.55	1704.96.75	2707.88.96	3710.81.17	4713.73.38	5716.65.58	6719.57.79	7722.49.99	8725.42.21
802.33.77	1805.25.97	2808.18.18	3811.10.39	4814.02.60	5816.94.80	6819.86.01	7822.78.22	8825.70.43
902.62.99	1905.55.19	2908.47.40	3911.39.61	4914.31.82	5917.24.02	6920.16.23	7923.08.44	8926.00.65
1002.92.21	2005.84.41	3008.76.62	4011.68.83	5014.61.04	6017.53.24	7020.45.45	8023.37.66	9026.29.87

60, 10, 10, 7½ & 5. Same as 60, 20, 10, 7½ & 5. 40, 33½, 10, 10, 7½. 37½, 20, 20, 10, 10, 7½. 35, 20, 20, 10, 10, 7½.

100.28.47	1103.13.19	2106.05.40	3108.97.61	4111.89.82	5114.81.03	6117.73.24	7120.65.45	8123.57.66
200.57.69	1203.42.41	2206.34.62	3209.26.83	4212.19.04	5215.11.25	6218.03.46	7220.95.67	8223.87.88
300.86.91	1303.71.63	2306.63.84	3309.56.05	4312.48.26	5315.40.47	6318.32.68	7321.24.89	8324.17.10
401.16.13	1404.00.85	2406.93.06	3409.85.27	4412.77.48	5415.69.69	6418.61.90	7421.54.11	8424.46.32
501.45.35	1504.30.07	2507.22.28	3510.14.49	4513.06.70	5516.00.91	6518.93.12	7521.85.33	8524.77.54
601.74.57	1604.59.29	2607.51.50	3610.43.71	4613.35.92	5616.28.13	6619.20.34	7622.12.55	8625.04.76
702.03.79	1704.88.51	2707.80.72	3710.72.93	4713.65.14	5716.57.35	6719.49.56	7722.41.77	8725.33.98
802.32.01	1805.17.73	2808.09.94	3811.02.15	4813.94.36	5816.86.57	6819.78.78	7822.70.99	8825.63.20
902.61.23	1905.46.95	2908.39.16	3911.31.37	4914.23.58	5917.15.79	6920.07.00	7922.99.21	8925.91.42
1002.90.45	2005.76.17	3008.68.38	4011.60.59	5014.52.80	6017.45.01	7020.37.22	8023.29.43	9026.21.64

60, 10, 10, 7½, 5, 2. Same as 60, 20, 10, 7½, 5, 2. 40, 33½, 10, 10, 7½. 37½, 20, 20, 10, 10, 7½. 35, 20, 20, 10, 10, 7½.

100.27.90	1103.02.71	2105.94.92	3108.87.13	4111.79.34	5114.71.55	6117.63.76	7120.55.97	8123.48.18
200.56.12	1203.31.93	2206.24.14	3209.16.35	4212.08.56	5215.00.77	6217.92.98	7220.85.19	8223.77.40
300.85.34	1303.61.15	2306.53.36	3309.45.57	4312.37.78	5315.29.99	6318.22.20	7321.14.41	8324.06.62
401.15.56	1403.90.37	2406.82.58	3409.74.79	4412.66.00	5415.58.21	6418.50.42	7421.42.63	8424.34.84
501.44.78	1504.20.59	2507.12.80	3510.05.01	4512.97.22	5515.89.43	6518.81.64	7521.73.85	8524.66.06
601.73.00	1604.50.81	2607.43.02	3610.35.23	4613.27.44	5616.19.65	6619.11.86	7622.03.07	8624.95.28
702.02.22	1704.80.03	2707.72.24	3710.64.45	4713.56.66	5716.48.87	6719.40.08	7722.32.29	8725.24.50
802.31.44	1805.10.25	2808.02.46	3810.94.67	4813.86.88	5816.79.09	6819.71.30	7822.63.51	8825.55.72
902.60.66	1905.40.47	2908.32.68	3911.24.89	4914.17.10	5917.09.31	6920.01.52	7922.93.73	8925.86.94
1002.89.88	2005.70.69	3008.62.90	4011.54.11	5014.46.32	6017.38.53	7020.30.74	8023.22.95	9026.15.16



Tables, reduced in size, from  
LADD'S DISCOUNT BOOK.

If the amount was, say \$73.45, add the net of 45 cents, which the table shows is 13 cents, total net \$21.46.

The hand points to the net of

73 cents,	21 cents.
\$7.30	\$2.13
\$73.00	\$21.33
\$730.00	\$213.31
\$7,300.00	\$2,133.11
\$73,000.00	\$21,331.10

The full size of the book is 7½x10 inches.  
The sample page herewith is reduced in size.

Accurate, Rapid, Convenient and Practical.

Regular Edition, Handsomely Bound in Cloth, Full Indexed, . . . . . each, \$3 00  
Double Indexed Edition, Handsomely Bound in Cloth, Double Indexed all through, . . . . . " 4 00

This preservation photocopy was made  
at BookLab, Inc. in compliance with copyright law.  
The paper meets the requirements of ANSI/NISO  
Z39.48-1992 (Permanence of Paper)



Austin 1998